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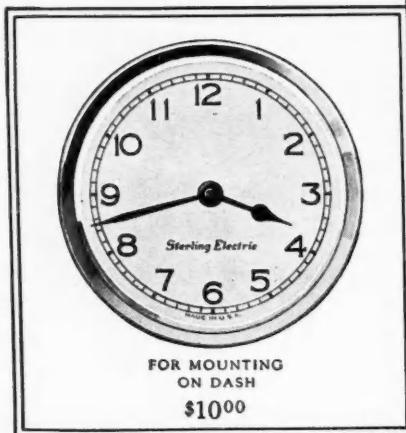
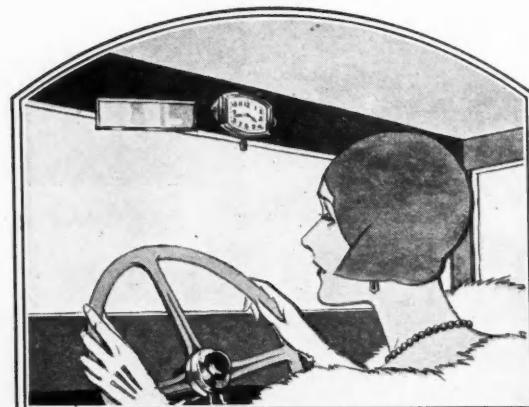
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AUTOMOTIVE INDUSTRIES

VOLUME 63

August 23, 1930

NUMBER 8

Dealers Thwart Waste with Junking Plan



Specter of waste, menacing markets, is driven away by the systematic demolition of old cars

N.A.C.C. approves Cleveland system of scrapping cars unfit for resale ++

By Leslie Peat

PERHAPS the most important step in handling the ever-increasing problem of junking obsolete motor vehicles was taken when directors of the National Automobile Chamber of Commerce placed the stamp of factory approval on the Cleveland junking plan.

Although the plan may be put into operation with the cooperation of any reputable scrap concern, the A. Shaw Co., the Cleveland scrap material organization with which dealers in that city are cooperating, has taken steps to extend its operations to other cities. The National Guarantee Auto Scrapping Co. has been formed by the Shaw interests to carry on the expansion program. This concern is ready to operate in other cities where dealers want them to, and where a sufficient volume of "junkers" can be obtained to make the operation practical. A number of cities have evidenced an interest in the proposition.

Some indication of the confidence with which factories having junking plans view the Cleveland operation is shown by the fact that they recently approved acceptance of the yard's "Certificate of Demolition" instead of requiring that a factory representative witness the destruction of the car. This step obviously reduces the factory's supervisory costs and also speeds up junking, as it is now unnecessary for dealers working with the Cleveland yard to accumulate their junk-



Segregation of parts is the first function of the Cleveland plan, following dismantling of "junkers" at the yard + + +

ers until the arrival of a factory representative.

Although the Cleveland set-up has been outlined in previous issues of *Automotive Industries*, factory endorsement of it brings it into the foreground of interest which calls for a more detailed consideration of its essential features.

Instead of establishing their own junk yard, as dealers in a number of cities have done, the Cleveland dealers entered into an arrangement with a going, experienced scrap concern, the latter providing the capital and facilities to carry on the operation. As a result of this arrangement, the Cleveland Guarantee Auto Scrapping Co. was formed. Automobile dealers put up no money and assumed no financial responsibility.

Managerial talent is provided by the Shaw Co. but the operating policies are controlled by three directors elected by the Cleveland Automobile Manufacturers and Dealers Association. These directors are W. Pitt Barnes, Dodge Brothers dealer; G. G. G. Peckham, Buick distributor, and R. J. Schmunk, Hudson-Essex distributor. These three directors dictate the price dealers receive for their junkers and control salaries paid to the scrapping company management. They also protect the dealers' monetary interest in the company.

The company contracts with each dealer individually to buy his "junkers" on an exclusive basis. The price being paid now as set by the dealer directors is 25 cents per hundred pounds, Blue Book weights being used. This rate, of course, would not necessarily apply in yards established in other areas due to the cost of transporting the scrap to market. Other features of the plan are also subject to variation to meet different local conditions.

Each "junker" sold to the yard must be complete,

including an old battery and four tires of any condition and size. One dollar is deducted for a missing battery and 25 cents for each missing tire. If it is necessary to tow the junker, the scrapping company assumes this cost. Payment is made to the dealer in cash as the cars are brought to the yard.

The scrapping company pays one dollar into a special fund held by the dealer association for each car purchased. At the end of the year it also rebates 25 per cent of the net profits after 6 per cent on the actual capital has been deducted, and this share of the profits is distributed among the dealers in proportion to the tonnage each has sold to the yard.

The yard guarantees to demolish all cars purchased and agrees not to sell used parts. In other words, all cars are scrapped and the remains sold as old material.

Summary of Advantages

A summary of the advantages of the Cleveland plan as outlined in a recent bulletin of the N.A.C.C., asking manufacturers to encourage similar plans everywhere, follows:

First—By providing a ready market for all junkers taken in by dealers, not only does the disposal cease to be a problem, but they may be removed from the premises as rapidly as they accumulate.

Second—It seems logical to expect that the dealers will receive more for junkers from a big volume scrapping concern having an assured supply of junkers especially since the operation is on a profit-sharing basis, than they might obtain from smaller scrapping companies that find it difficult to operate profitably on a basis of scrap sale only.

Third—The dealers enjoy all the advantage of co-

operative junk yards without any investment, expense or the concern of management.

Fourth—The dealers obtain all the advantages of scientific junk yard management, including the most economical destruction methods—established outlets for scrap material—big volume tonnage enabling the scrapping company to make direct mill contracts—sufficient capital to hold scrap for favorable market prices—experienced supervision.

Fifth—It absolutely stops the “junker repeater” losses to the dealer. This refers to that type of car which the dealer has sold to a junk dealer and which is fixed up and resold as an operating vehicle to again appear on a dealer's lot as a tradein. This vicious cycle with its attendant dealer losses has been going on all over the country. Under this Cleveland plan, the dealer is assured of the total and absolute elimination of all junkers which pass through his hands.

Sixth—The sale of used parts is prohibited. This will tend to increase the new parts business.

Seventh—The development of systematic commercial channels for the rapid elimination of unmerchantable cars provide a greater market for good used cars and obviously for more new ones.

No Used Parts Sold

Some emphasis, it will be noted, is placed on the fact that under the Cleveland plan, *no used parts are sold*. This policy, it is generally urged, helps to get the old cars off the road and also aids the sale of new parts. On the other hand, probably not over 25 per cent, or 750,000 of the 3,000,000 or more cars going out of service annually, wind up their careers in dealer used car stocks. If all of these 75,000 cars were demolished and no parts from them sold, there would still be 2,250,000 cars annually to provide a supply of used parts for anybody who wants to make a business of selling them. So it seems clear that used parts are going to continue to be sold as long as there is a demand for them whether the various types of cooperative junk yards sell them or not.

If the Cleveland plan is adopted widely, the principal reason for confining it exclusively to scrapping and not trying to sell used parts is more likely a purely commercial one. The comparatively small number of cars

wrecked is what makes the market for used parts. If an attempt were made to wreck cars and salvage their parts for resale on the scale that the Cleveland plan contemplates, it seems probable that the supply of used parts would so far exceed the demand for them that the market would be broken. Used parts prices would drop below the profit point and salvaging them would be conducted at a loss. Consequently, there is reason to believe that any effort to dispose of junkers on a large scale must necessarily operate on a scrapping rather than a wrecking base.

Agrees to Use Central Yard

It also will be recalled that the Cleveland yard's agreement with the dealer provides that he sell all his “junkers” to the yard. The importance of this proviso is questionable, inasmuch as there is no definition as to what is and what is not a “junker.” Consequently it is up to the dealer to decide, which presumably means that he will continue to sell his “junkers” where he can get the best price. In the case of cars demolished under factory junking plans, this means that the Cleveland yard will get them. Whether the yard gets other cars which might be considered in the junk class but on which the factory pays no bounty, will depend on where the best price can be obtained.

At the present time, Cleveland is extending its operations to cover points within a radius of 100 miles. The arrangement with these outside dealers is exactly the same as for those in Cleveland except that transportation charges will be deducted from their share of the yearly distribution of profits. In other words, all dealers are assured a minimum of 25 cents per hundred pounds for all junkers they sell to the yard. How much additional dealers outside of Cleveland get depends on what it costs to transport their junkers to the yard.

(Turn to page 263, please)

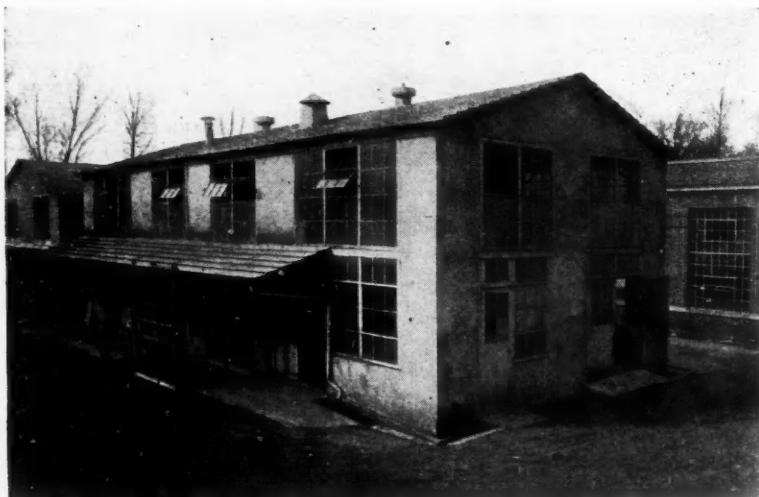
Efficiently laid out yard with proper power equipment to shear up sheets and cut up parts is essential for profits under the Cleveland plan for junking old automobiles + + + + +



Engine Performance at High Altitudes

Tests are made in laboratory in which flying heights are simulated by decreasing the atmospheric pressure and lowering the temperature

By P. M. Heldt



Altitude Laboratory at Bureau of Standards

NUMEROUS research projects on automotive subjects are constantly under way at the Bureau of Standards, and reports on the work done appear regularly in the official publications of the bureau and elsewhere. Undoubtedly one of the most ambitious projects of this kind has been the cooperative fuel research which is carried on with the cooperation of the National Automobile Chamber of Commerce, the Society of Automotive Engineers and American Petroleum Institute. Various phases of this research have been reported on at intervals, and at the last summer meeting of the S.A.E. two papers were presented in which the investigations at the bureau regarding the effect of fuel volatility on vapor lock and on engine acceleration were discussed.

On the occasion of a recent visit to the bureau the writer found investigations in preparation or under way on superchargers, lubricating oils, flame propagation in engine cylinders, effects of humidity on engine operation, ignition phenomena and combustion at constant pressure. The objects of these various investigations are outlined and the equipment used is briefly

described in the following. It must be understood that this article covers only a part of the current automotive activities of the bureau.

One of the installations at the Bureau of Standards that is of considerable automotive interest is the altitude laboratory, in which aircraft engines can be tested under conditions simulating those existing at high altitudes. This testing laboratory is particularly adapted to tests on superchargers, which type of equipment is used mainly for altitude flying. A test of a Roots blower type supercharger fitted to a Curtiss D-12 water-cooled V engine was recently completed and the same engine has now been fitted with a centrifugal type of supercharger.

In the first tests with the Roots blower it was driven at 1.2 times crankshaft speed, which gave a critical altitude of 5000 ft. at 2000 r.p.m. That is to say, with the supercharger geared in this ratio air can be supplied to the carburetor at sea-level pressure up to an altitude of 5000 ft. After the completion of this series the supercharger was geared to run at twice engine speed, which would have given the engine a critical altitude of 18,000 ft. at 2000 r.p.m., but the blower failed mechanically during preliminary runs at the higher speed.

At the time of the writer's visit the Curtiss D-12 engine was in the altitude laboratory and was equipped with a centrifugal supercharger with a General Electric impeller and a diffuser which builds up the pressure of the air from its kinetic energy as it leaves the vanes of the rotor. This supercharger was designed to give the engine a critical altitude of 12,000 ft. The impeller of the supercharger rotates at 23,500 r.p.m.

While tests are being carried out, the atmosphere in the test chamber or altitude chamber is very rare and its temperature very low, hence all observations are taken outside the chamber. The chamber is pro-

Studied by the Bureau of Standards

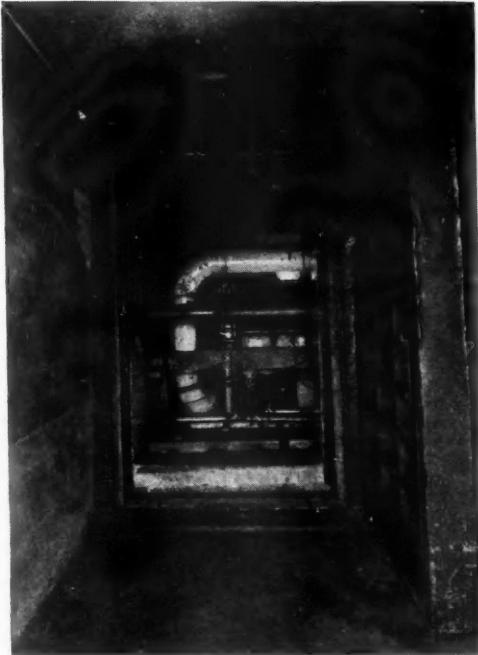
vided with a safety door designed to protect the testing staff in case of an explosion within it. This door opens toward the outside and when the test is first started it is latched, but after the air pressure in the chamber has been reduced considerably by the vacuum pumps the latch is released and the door is then held closed by the excess of the atmospheric pressure over the pressure within the chamber. In case of a gas explosion within the chamber the door would open as soon as the pressure within reached atmospheric pressure, whereby the force of the explosion would be reduced. As an additional safeguard a sort of entrance vestibule is built outside the door, of the same size as the door frame.

In simulating conditions at high altitudes it is necessary to reduce the pressure of the air entering the carburetor, and to cool it. Cooling of the carburetor air is effected by a cooler located in the upper part

Space limitations will not permit a complete and detailed description of the ambitious research work being done by the Bureau of Standards in cooperation with the N.A.C.C., the S.A.E. and the American Petroleum Institute.

In the accompanying article, and one to be printed in next week's issue of *Automotive Industries*, Mr. Heldt has outlined the highlights of the bureau's equipment and methods used in studying fuel and lubricant problems.

of the altitude chamber. On its way to the carburetor the air passes through a venturi meter which measures the quantity of air entering the engine per unit of time, or the rate of air flow. In determining the pressures and temperatures corresponding to different altitudes, use is made of N.A.C.A. standard altitude tables. The temperature of the air as it passes through the venturi meter is also measured, a thermo-couple being used for this purpose. Many other temperatures are measured in the course of an engine test, and all such measurements are made by means of thermocouples.



Safety door of and entrance to altitude laboratory

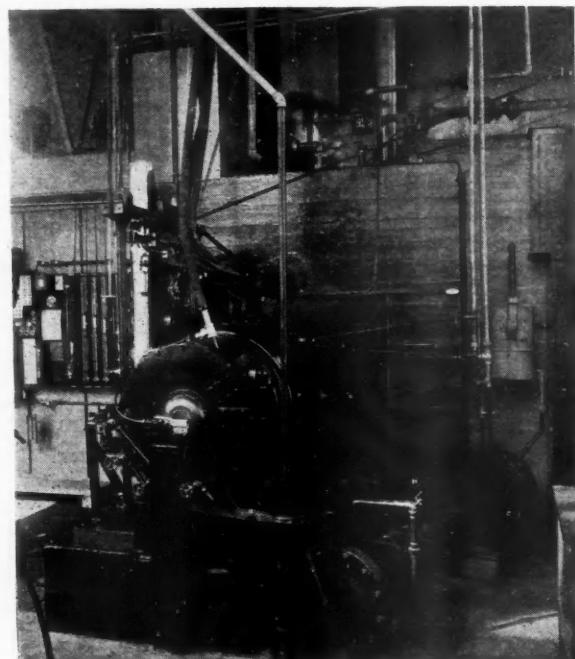


Electric dynamometer with water brake for use under extra heavy loads

The temperature of the air in the altitude chamber is lowered by means of cooling coils, but not quite to the point corresponding to the mean temperature of the atmosphere at the altitude which it is intended to simulate, since it is figured that in flight the temperature in the engine nacelles will be higher than the outside temperature.

In making altitude tests, sufficient data are taken to permit of setting up a complete heat balance. No check is made on the completeness of combustion and on losses by direct radiation, however. The engine is mounted on wooden sleepers, to give it the benefit of their slight cushioning effect, which is similar to that of the conventional engine bearers in planes fitted with in-line engines.

As at high altitudes the exhaust from the engine is discharged into a rarefied atmosphere and less back pressure is encountered, some means must be provided to reproduce this condition. The exhaust, of course, cannot be discharged into the altitude chamber, but reduction of the back pressure is effected by means of pumps; the exhaust gases being first cooled, as described below. The exhaust manifold is surrounded by a water jacket. Cooling water enters this jacket at the propeller end, and at the opposite end this water is sprayed into the exhaust pipe through a series of small drill holes in the wall of the exhaust pipe. The quantity of cooling water is measured by a venturi meter before it enters the altitude chamber, and its temperature is also measured; and since the water is discharged in the form of steam with the exhaust gases, at the same temperature as the latter, which temperature is measured, all the data for calculating the amount of heat carried along by the exhaust gases on passing out of the engine cylinders are available. The loss to the cylinder jackets is determined in the same way. In the engine on which the supercharger tests are being made the exhaust loss figures out to 42 per cent. Adding up the brake horsepower, the loss to the cylinder jackets and the loss by way of the



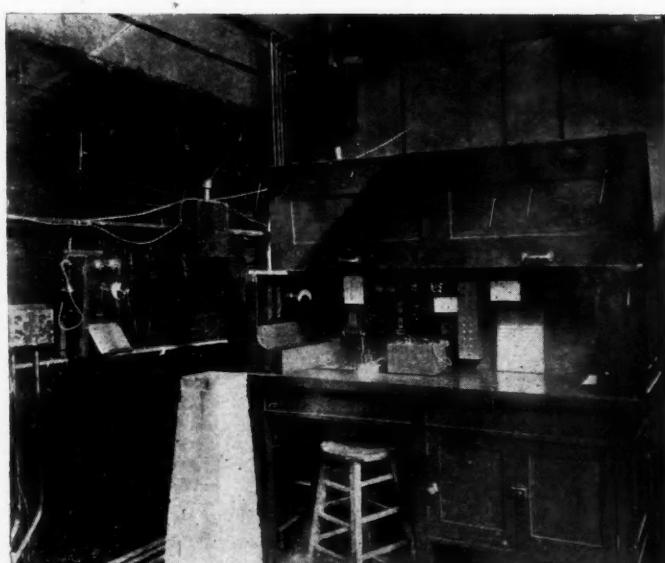
Potentiometer and commuting switch for temperature measurements

exhaust gases, there is usually a residual loss (losses unaccounted for) of from 8 to 10 per cent, which is due to the fact that all the fuel is not completely burned to carbon dioxide and water and that there is also considerable loss from direct radiation.

In controlling the temperature of the carburetor air the latter is first cooled by means of an ammonia plant to 50-55 deg. Fahr. below zero. This freezes out practically all moisture and assures a constant humidity of the air at the carburetor. The air is then passed over electric heating grids and brought up to the temperature corresponding to the altitude for which the test is to be made. This method of heat control has the advantage that it is far more sensitive than the method of cooling the air directly to the desired temperature by means of the ammonia plant.

Five men are required to make all of the observations when a test is in progress, as it is desirable that all readings should be taken simultaneously as far as possible. Readings are taken of the temperatures at the venturi air meter, the air horn, the supercharger inlet, the supercharger outlet, the air pullet, each of the two inlet manifolds, the altitude chamber, jacket inlet, jacket outlet, oil inlet and outlet, exhaust water inlet and outlet on each side and the inter-cooler. All temperature readings are taken by means of a single portable potentiometer which is connected to the different thermocouples by a multipoint switch having 20 contacts, so that with the present layout there are several spare points.

(Turn to page 263, please)



Manometer and dynamometer-control stand

Twelve Aircraft Repair Stations Approved by Commerce Department

Certificate eliminates necessity of submitting detail drawings of work to Aeronautics Branch for approval + + + + + + +

Approved Airplane Repair Stations

	Type for which Approved	Date
Aero Corp. of Calif. Los Angeles, Calif.	Fleet	6-13-30
Air Associates, Inc. Chicago, Ill.	Travel Air Swallow Mono Aircraft	6-4-30 (cert.) 6-13-30 (cert.) 6-21-30
Air Associates, Inc. Garden City, L. I., N. Y.	Travel Air	6-2-30 (cert.)
Baltimore School of Aero.	Fleet	6-30-30
Baltimore, Md.		8-4-30 (cert.)
Boeing Air Transport Oakland, Calif.	Own Equipment	2-26-30 3-26-30 (cert.)
Grumman Aircraft Engr.	Keystone Corp., Baldwin, N. Y.	7-10-30 (cert.)
Lockheed Aircraft Corp.	Detroit (Parks) (Ryan)	8-1-30 (cert.)
Ludington Aircraft, Inc.	Swallow	6-13-30
Phila., Pa.	Travel Air	6-30-30
National Air Transport, Inc., Chicago, Ill.	Own Equipment	3-26-30 (cert.)
Pacific Air Transport, Inc.	Own Equipment	3-26-30 (cert.)
Parks Air College E. St. Louis, Ill.	Detroit (Ryan & Parks) Lockheed	7-7-30 4-14-30 (cert.)
Southern Aeromotive Service, Dallas, Texas	Travel Air Pitcairn	6-17-30 8-1-30
		7-25-30 (cert.)

APPROVED repair station certificates have been issued by the Aeronautics Branch of the Department of Commerce to 12 aircraft repair stations since this activity was first provided for under an amendment to the Air Commerce Regulations earlier in the year. These stations are entitled to repair licensed aircraft only of the type for which it is adequately equipped, and no other repair station may repair licensed aeroplanes.

Issuance of certificates, as has been required since last April, marks an evolution of aircraft flying. Heretofore manufacturers themselves took care of repairs but developments of the aircraft industry has called for establishing of stations in different sections of the country.

Heretofore anyone repairing licensed aircraft was obliged to submit to the department detailed drawings for such repair, and in those cases where repair to any component exceeded 50 per cent, a submission of stress analysis was required in addition. This change in the regulations, permitting approval of qualified repair stations, has rectified this condition and eliminates the necessity of submitting such technical data when the licensed aircraft is repaired by such station in

accordance with the required conditions.

In the event a manufacturer authorizes a certain repair station (whose equipment, personnel and methods meet the approval of the department) to repair certain models of his aircraft, even though the repair station is not a factory branch, the department now is in a position to re-license such aircraft so repaired without any formality other than the usual line inspection for condition, material and workmanship.

Obviously it is impossible for any repair station to be equipped to repair all types of aircraft in existence. A station equipped for the repair monocoque fuselages, although it is likely that wooden wings, would hardly be in a position to make repair to all-metal aircraft. Also it is unlikely that the average repair station would be in a position to repair monocoque fuselages although it is likely that such a station could stock shells of such fuselages and other parts so as to be in a position to replace, adequately, such parts. The repair station, therefore, will be authorized to repair only such aircraft as it is adequately equipped to handle.

The department desires to restrict the activities of approved repair stations to repair work exclusively.

Standard Test Basis for Anti-

**Experimenters differ over inclusion of pertinent data
Complete correlation of existing isolated facts into
a system of laws necessary to progressive needs**

THE art of fuel testing for anti-knock evaluation has reached the stage where the requirements of fuel utilization demand that it be established on a scientific basis. This evolution involves, among other things, a complete correlation of data obtained by the various laboratories now doing such work, as well as the regulation and control of methods of test, and standardization of the basis of rating, whether the base be a standard fuel or a universally used arbitrary scale.

The importance of considering carefully such proposals can hardly be exaggerated. We need only regard the present haphazard state of fuel rating to realize what lack of such consideration means. Fuel testing is being carried on by various laboratories, but each is apparently working independently and without concern for the results of others. Such an attitude is inexcusable if the full value of the results obtained are to be realized.

This is a plea that experimenters appreciate (or make an effort to appreciate) the general trend of the fuel testing data found by other laboratories. To make this possible, it is necessary that all laboratories publish fully and without stint all data obtained, together with a full account of the controlling factors involved in obtaining the results. It will then be possible to make a complete correlation and study of such data with results that will be well worth the time and effort expended.

The inclusion of data in a technical publication is a point over which many experimenters differ. The usual practice appears to be to publish either none at all or to include only such statistics as are germane to the theory of the reporter. Such figures presented are usually considered "reliable"; the rejected data are labeled "unreliable" or "of no value." It would seem needless to point out that no scientific investigator has the right to suppress data which he considers "unreliable" or "useless," especially in fuel testing which, as a science, is only in its infancy. It should be left for others to determine whether such data are useless or not. Not infrequently some analyst has found real value in data which the original investigator thought unreliable and useless. It is therefore imperative that *all* data obtained be published whether considered reliable or otherwise. It should be left to subsequent

students of the publication to judge the validity of the data.

For such judgment to be made, and for it to be of any value, it is evident that a complete account of the method of test and the controls used must also be given. Too often, such accounts omit factors which may seem trivial but which may ultimately be of the utmost importance. One such control is mixture strength. The air-fuel ratio at which anti-knock value of a fuel blend or dope is determined is of very great significance. Yet it is usually left out of published reports. It has been shown that this ratio plays a big part in the anti-knock value of ethyl fluid. Yet different laboratories still publish widely varying values for the same ethyl-lead content with no mention of the mixture strength used.

At present, the published data, except for those submitted by the various government agencies, are too meagre to allow of anything more than a suggestive analysis. But, though it be merely suggestive, it will show qualitative trends which should be of great value to fuel testing science. The author recently made such an analysis, the technical discussion of which is beyond the scope of this paper. He believes that it points the way for a possible explanation of differences in behavior between certain classes of anti-knock fuels. The reason why ethyl benzene and ethyl alcohol behave similarly but different from benzol, for example, is plainly evidenced by such a correlation. He believes, further, that it will show clearly the reason for the various anti-knock values found for ethyl fluid, aside from the effect of mixture ratio. From the valuable relations shown by this meagre analysis, the author concludes that a complete correlation of such data will mark a most significant advance in fuel testing.

The Method of Test

In the first part of this series, the writer noted three aspects of the fuel testing problems whose consideration he thought imperative if fuel testing is to have a scientific foundation. Only after a critical examination of these phases will it be possible to correlate and codify existing isolated data and facts into a system of laws, such as forms the basis of every science.

Knock Rating of Fuels Proposed

Ready and accurate means of determining safety of fuels available in heptane-octane rating + + +

By Sandor D. Rubenz

Aeronautical Engine Laboratory
Naval Aircraft Factory
Philadelphia

In that section he went into a general discussion of the necessity of correlating the data reported by the different laboratories. In this part he will consider, briefly, the problem of a standard type of test. The writer proposes only to set down the basic principles upon which all fuel testing methods must be based. Certain criteria must be set up for determining the knock tendency and available methods for recognizing these tendencies must be critically analyzed.

The prime factor to be considered in studying a method of test is that it give a true index to the anti-knock value. But there are other points no less important and they may be listed as follows:

- (a) Availability of instruments.
- (b) Reproducibility of results.
- (c) Convenience for accurate measurement of all factors.
- (d) Ease of control of variables.
- (e) Simplicity of method.

All methods must be judged according to the way in which they meet the requirements set up by these factors.

Find the Start

The writer has found in his work as a tester of fuels that the one reliable method of comparing anti-knock efficiencies of fuels is to find the very start of the knock. As soon as the knock becomes even moderately severe, accurate comparison of intensities becomes difficult and even impossible. The best that can be done in this case is to determine the average detonation intensity—not a very scientific procedure.

It is therefore a first qualification that the method permit the recognition of knock initiation. This makes unsuitable such devices as the bouncing pin, sound intensity matchers, bounding balls, and other such arrangements, since none of these as at present developed will indicate the point of incipient knock. Strange to relate, the only reliable instrument is the human ear, the knock being recognized by the high-pitched, sharp, metallic "ping." The so-called "personal factor" in no wise impairs the sensitivity of the ear for matching the first signs of audible knock.

Experience has shown also that the single-cylinder,

liquid or vapor-cooled engine is the only instrument in which reliable fuel testing can be done. Special bombs, with all sorts of ingenious indicators, optical, chemical and thermal, have been devised, but none has yet been successful. They seem to offer great future promise, but for the present they may be dismissed. There is no way of simulating in a bomb, the actual combustion process in an engine cylinder. Indeed, even if we knew how to produce various effects in the bomb, we do not know what the variable conditions are that exist in the high-speed engine. There is no sense in trying to duplicate a process of whose characteristics we are ignorant. We do not know what to duplicate.

The engine should be a single-cylinder for two reasons. First, all multi-cylinder engines are subject to uneven distribution of the gaseous mixture. Second, if we are to use sound as the indicator of knock, the engine must make as little noise as possible. The most convenient—and, indeed, best from all viewpoints—index of anti-knock value is the compression pressure at which audible knock starts. It has been found that the point of incipient knock as indicated by this cylinder pressure, for example, is dependent upon the mixture strength, that is, the ratio of fuel to air. If the different cylinders of a multicylinder engine have different mixture ratios, each cylinder will start to "ping" at a different pressure, and the result will be most confusing and unreliable to the operator, if, indeed, his ear is sensitive enough to hear the faint knock amid all the crash of explosions and clattering valves. A single-cylinder engine running between 400 and 900 r.p.m. is sufficiently quiet to allow even a comparatively untrained ear to catch the faint first signals of knock.

Liquid-Cooled Test Plant

The engine, of course, should be liquid—or, preferably, vapor-cooled to maintain the cylinder walls at a constant temperature. The temperature of the air-cooled cylinder is beyond all control, but that of a

water-cooled cylinder will be practically the temperature of the water in its jacket, and water temperature may be quite accurately controlled. Steam is preferable, especially if maintained at atmospheric pressure by a condensing system. The jacket temperature will then be maintained automatically at 212 deg. Fahr.

It has been stated earlier in this paper that the compression pressure is the best and most convenient indicator of the knock value, the pressure at which knock first becomes audible being taken as the value index. Many other indices are used, but all of them are plainly inferior to the pressure from the standpoint of the list of qualifications given on page (1). Some of these indices and their faults are given below.

Indices and Their Faults

(A) *Power Output.* The difficulty here is that there is no reliable means for measuring the indicated power output of a high speed explosive engine. It is necessary to measure the indicated power to compare knocking tendencies, since all data point to the fact that these tendencies are dependent upon indicated pressure conditions.

(B) *Maximum Explosion Pressures.* The same lack of a means for measuring indicated power prevents the accurate recognition of maximum cylinder pressures. Besides, the practical measurement of these factors at their maximum values often necessitates operating the engine under rather severe conditions of temperatures and pressures. Both of these may change considerably the influence of the cylinder condition, shape and size upon the tendency to knock.

(C) *Temperature Differences.* These are very unreliable, since it has been found that considerable knock must be present before any change in temperature of the cylinder is indicated. Besides, the change is so small that even with a very good thermometer a large error may occur in the measurement.

(D) *Spark Advance.* It is well-known that knock can be induced by a sufficiently advanced spark, or suppressed by retarding the ignition. The use of this fact as an index to knock value has, however, given such inconsistent and confusing results that it has been abandoned by practically all investigators.

Compression Pressure Method

We have left, then, the compression pressure. This can be measured quite simply and accurately in two ways. One uses a variable compression ratio engine with the throttle opening fixed. The other uses an engine of fixed compression ratio, but with variable throttle. The latter is simpler, less expensive, and no less accurate. The compression pressure is inversely proportional to the manifold vacuum and this can be very easily measured by a water manometer. All that is necessary then is to determine the manifold vacuum (all other operating conditions, including speed being held constant) at which knock starts, and we have a sensitive, accurate index to indicated conditions accompanying the knock. To insure that the mixture strength of optimum thermal activity has been used,

the author determines for any one fuel the manifold vacuum for incipient knock for a number of air-fuel ratios. If the mixture ratio is then plotted against the vacuum, it is found that some ratio demands the highest vacuum (or lowest pressure) for the suppression of knock. This peak manifold vacuum is taken as the index to the anti-knock value of the fuel. If the fuels to be compared are tested at different compression ratios, as is often the case, the equivalent manifold vacuums at the various compression ratios may be found from a chart prepared for the purpose.

The Rating of Anti-Knock Values

The questions of a method of test and of the correlation of independent data having been considered, the next problem confronting the fuel tester is that of rating. In what manner and on what scale shall the anti-detonating value of a fuel be denoted so that it means the same definite thing to fuel users in all parts of the world? That is the crux of the whole problem of fuel testing. And, likewise, it is the question which has been answered least satisfactorily, so far as the fuel-buying public is concerned.

This aspect of anti-knock rating is one of considerable complexity from the standpoint of the consumer. Nearly every conceivable method of rating has been used. Some of them are based on arbitrary scales, some directly on blends of reference fuels, some on an engine condition, such as ignition advance, or compression ratio, and some on what might almost be termed anything at hand. No attempt at coordination and standardization of rating bases has been made, and the result has been complete confusion.

How, then, shall a fuel be rated so that a misconception of its value is averted or made impossible? Obviously, a prime requirement of such a rating must be universality. Its meaning must be definite and immediately recognizable to purchasers in all parts of the world. It must have the same definite value for a man in New York that it has for a man in Australia. It must mean the same thing today, and tomorrow, or even years hence, until a superior rating basis is discovered. Clearly, such a rating must be used by all fuel testers, or else their own ratings must be easily translatable into the terms of the universal scale. There is no room for arbitrary scales or scales indicating some engine condition, whose evolution is a secret known to the investigator alone. The fuel purchaser must understand fully the scale and the meaning of values based on it, in universal terms.

Reference Fuel Needed

Ultimately, all ratings must be based on some reference fuel. The performance of the tested fuel should be always compared to that of some standard to whose anti-knock value its own anti-knock efficiency is referred. Even where arbitrary scale numbers are used, they are arrived at by giving an index number to the rating of the standard fuel.

It is clearly logical then to rate the fuel directly in terms of the base and reference fuels instead of engine

conditions which are constantly changing, and differ from one engine to the next; and more so, instead of arbitrary scales which have an obnoxious air of secrecy about them. It is also of the utmost importance to have a single combination of base and reference fuels for universal use so that fuel purchasers anywhere will know immediately the usefulness of the fuel from the rating furnished with it. Even where other scales are used, such a fuel combination is necessary to check the performance of the testing engine from time to time.

Such a blend of fuels must meet certain requirements.

(1) Its chemical composition must be definite. That is, it must be made of pure substances. Evidently, gasolines are unsuitable, since they are far from pure. They are really very complex, heterogeneous mixtures of hydrocarbons, a fact which makes accurate duplication of their anti-knock value in subsequent samples very difficult. The standards must be reproducible to have the same anti-knock value within limits of experimental error.

(2) The substance or substances must be universally available.

(3) Within the mixing range of the substances, the range of anti-knock values obtained must be large

enough to match the anti-knock values of all gasolines in common use.

The most widely used reference fuels are tetra-ethyl lead and benzol; the universally used base is gasoline. The disadvantage of gasoline has been pointed out. Neither of the reference fuels meets, with much success, the first requirement. Besides, ethyl lead is poisonous, expensive and is effective only with very small concentrations, inducing experimental errors in mixing small batches. Ethyl alcohol, or toluene, or even pure benzene may be used as reference fuels, but they require gasoline as a base fuel.

An artificially prepared fuel combination which can be made for universal distribution, and whose properties can be precisely controlled in the preparation, is at hand in a mixture of two pure hydrocarbons. One, normal heptane, is a very pronounced knocker. The other quite resistant to knock, is an octane prepared from tertiary butyl alcohol. Here we combine in the blended fuel both base and anti-knock reference fuels. The tested fuel would then be rated in terms of the heptane-octane ratio, or percentage octane in heptane. The universal use of such a standard would give fuel consumers the world over a ready and adequate means for determining the safety of the product they buy.

Dealers Thwart Waste With Junking Plan

(Continued from page 255)

These transportation costs, however, are being held at a low figure. Cleveland is an important new car distributing point as large numbers of cars are brought across Lake Erie on boats and loaded on trailers for transportation to interior points. These trailers ordinarily return empty, but they are now being used as much as possible to carry junkers back to the Cleveland yard. Because a return load is provided, where none was formerly available, the rates are reasonable. For example, the charge for bringing a junker from Akron to Cleveland, a run of about 30 miles, ranges from \$3 to \$4.

It is planned to follow this general scheme of operation at other points where similar yards may be opened as it is more economical to scrap on a large scale than it is to operate a number of smaller yards. In areas where new cars are distributed on trailers, the availability of this method of transportation will be a helpful factor.

In order to justify the establishment of a scrap yard similar to the one in Cleveland, there should be a registration of about 100,000 cars in the territory to be served and the yard should handle at least 5000 cars annually. This is from four to five times as many cars as any of the dealer-owned and operated yards are handling annually. But such yards all operate on the wrecking basis—that is, they sell used parts. Operating on a 100 per cent scrap basis, big scale operation seems to be essential not only to make economical preparation of the scrap possible, but also to sell the

scrap most effectively. Most of the dealer-owned and dealer-operated yards now in operation sell their scrap to scrap dealers, who in turn deliver it to users. With big scale operation the yard produces enough scrap to market it directly at higher prices than the scrap dealer can afford to pay.

Engines at High Altitudes

(Continued from page 258)

Fuel is fed to the carburetors by air pressure in the fuel tanks, and this pressure must be regulated in accordance with the altitude tested for. Two fuel measuring tubes are arranged in the observation room. Through the center of each tube extends a rod which carries two disks of a diameter only very slightly smaller than the inside diameter of the tube. As fuel is drawn from the measuring tube the fuel level drops gradually and can be clearly observed. When the level passes one of the disks it drops very much faster than otherwise, because there is very little space between the rim of the disk and the inner wall of the tube. This sudden increase in the speed of descent for the fuel level is the signal for taking readings, as the disks in the measuring tube are so spaced that a known amount of fuel is included between them.

The instruments used for measuring temperatures and fuel consumption are arranged in two groups at the rear of the laboratory and on opposite sides of the altitude chamber. The dynamometer and engine controls are located at the front end of the laboratory where torque, speed and pressure measurements are made. A signaling system is provided so that all readings may be taken simultaneously.

Simplicity of Design Favored Air-Cooled

History of development, presented in a paper read before the British Institution of Mechanical Engineers, points to further growth

WITH the great triumph of British water-cooled engines in the Schneider Trophy race still fresh in the minds of all interested in aviation, it is natural to ask: "Why are air-cooled engines fitted to the majority of present-day aircraft? How has it come about that at the present time by far the larger proportion of the Service aircraft of the Royal Air Force employ air-cooled engine? Why is it that the same condition exists in most of the other fighting air forces of the world, while in commercial aircraft, both for the light plane and large air liners, air-cooled engine is almost universally used?"

There is a psychological aspect to consider when making a cursory review of the merits of the two types of engine. The present generation looks upon the water-cooled engine as the standard power unit for all the large and better class of road vehicles, and air cooling has been associated only with motorcycles and the light type of cycle car; it is also more accustomed to the smooth contours and apparent solidarity of the monobloc water-cooled engine, as compared with the somewhat less neat appearance of the air-cooled engine, and surely, it thinks, on aircraft of all vehicles air-cooled cylinders must be inefficient.

In spite of these apparently sound deductions, it is believed that the air-cooled engine will continue to gain in popularity for aircraft. In America, where, as in the case of the motor car, really large aircraft production prevails, because of the temperament of the people and the great outlet for aircraft, the air-cooled engine

is universally accepted. During the last two years over twenty serious manufacturing concerns have entered the aero-engine business, all producing air-cooled engines.

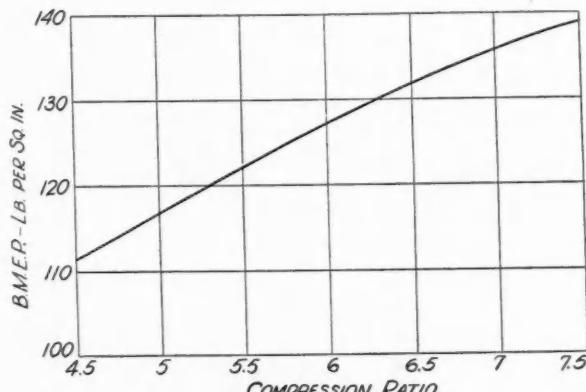
The development of the air-cooled type of aircraft engine with stationary cylinders was traced historically in a paper presented at the recent summer meeting of the (British) Institution of Mechanical Engineers at Bristol by A. H. R. Fedden, who also outlined the reasons for the ascendancy of this over the previous supreme water-cooled type. Mr. Fedden's paper is of particular interest as coming from an engineer actively engaged in the aircraft engine industry in England, where the radial air-cooled stationary cylinder-type of aircraft engine originated and because of the reason that this type of engine has more supplanted the water-cooled type more nearly in this country than anywhere else. That portion of the paper dealing with the historical development of the type of engine discussed and comparing it with the water-cooled type for different applications is reproduced in the following:

Air-Cooled Type in Ascendancy

Although an extremely ingeniously designed steam engine, of very light weight, was produced by Sir Hiram Maxim, and the petrol engine actually used by the Wright brothers was water-cooled, it is no exaggeration to state that air-cooled engines were responsible for making heavier-than-air machines practicable, because other types were comparatively heavy and permitted the carrying of so little fuel that anything but the shortest flights were out of the question.

In France, where aviation made by far its deepest impression in the first years of the present century, a series of air-cooled engines was developed and produced in considerable quantities, the most original type being the "Gnome" air-cooled rotary engine designed by Monsieur Seguin. Prior to 1914, therefore, by far the greatest number of aircraft were fitted with air-cooled engines. The war created a demand for a rapid increase in the power of aircraft engines, to which the rotary engine and the thermodynamic technique of the air-cooled cylinder were not equal, with the result that by 1920 the usually accepted size for general purposes was about 250 to 275 b.h.p., and these engines were almost universally of the water-cooled type.

In spite of this position, however, there were those who believed that provided sufficient time and experimental work were given to the thermodynamic aspect of the problem, the air-cooled engine offered



Relation between volumetric compression ratio and b.m.e.p. (average for all types of American aircraft engines)

Engines for Aircraft

The accompanying article looks back on aircraft engine development. It will be followed next week by a paper on the future of aero-engines

many advantages, and they had sufficient faith in their beliefs to concentrate upon the problems involved. The result of these labors is that in 1930 the air-cooled aero-engine is throughout the world in a considerable ascendancy over the water-cooled type. Apart from the light type of private aeroplane for which the air-cooled engine of about 100 hp. is universally used, the generally accepted size of aircraft engine is now 500 to 550 b.h.p., or approximately double the power of standard engines of 1920.

Advantages of Water-cooling

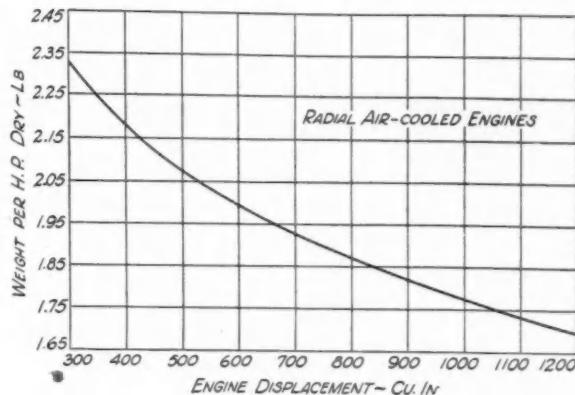
In championing the air-cooled engine it must not be thought that the advantages of the water-cooled engine are not appreciated, and it is believed that there is a definite field for both types. For extremely high speed and ultimate endurance the water-cooled engine offers at the present time advantages that the air-cooled engine cannot give. The reasons are that with the water-cooled engine very fine stream-lining and low drag, compact, wing radiators are possible, and that the higher compression ratio possible enables a slightly better thermal efficiency to be attained and consequently a low specific fuel and oil consumption.

Reviewing the main advantages of the air-cooled engine, it is considered that they should be placed in the following order: (a) simplicity; (b) light weight; (c) absence of a water system and risk of damage by frost; and (d) service qualifications—quick get-away maneuverability, less vulnerability.

(a) *Simplicity*.—It is considered that the outstanding advantage of the air-cooled engine is its simplicity. This term should include low first cost, fewness of parts, ease of repair, ease of installation and engine replacement, and, in the case of the radial type, ease of application of gearing and a supercharger.

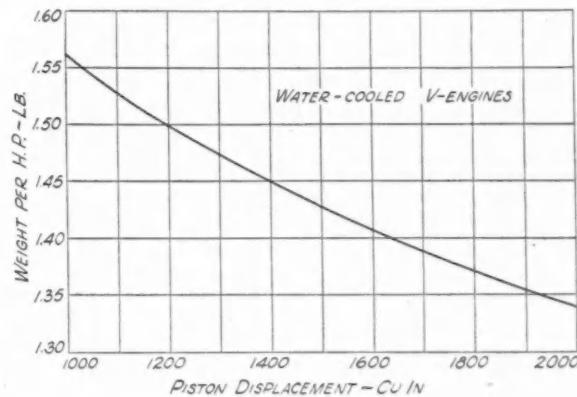
In support of this view a statement made by the late Chief of the Air Staff, Marshal Sir Hugh Trenchard may be quoted. When lecturing three or four years ago to the Cambridge Air Squadron, he said: "In the event of another war the wastage of aeroplanes would be so great that the country which could most rapidly re-equip itself would most probably win the war." Such an authoritative statement alone would seem to justify the retention of the large air-cooled radial engine for general service purposes, for of the known types of engines today, it alone offers hope of keeping an air force adequately supplied in time of war.

Granted equal manufacturing facilities, an air-cooled radial engine of 450 b.h.p. costs at least 20 per cent less than an in-line water-cooled engine of equal power,



Relation between piston displacement and weight per horsepower for American water-cooled V-type engines. The weight indicated being minus the cooling equipment

Corresponding relation of air-cooled engines for commercial use (below)



to which must be added, also, the cost of the radiator, water piping, etc.

An air-cooled radial engine of this size has also approximately 20 per cent fewer parts, but what is more important is that the single-bank radial engine lends itself readily to the employment of forgings for many of the stressed parts. A casting, even of the permanent mold type, is unsatisfactory for such a light and highly stressed structure as an aero-engine. It may be added that in really large production the use of forgings actually reduces the cost of manufacture, an

outstanding example being the Ford car. It is believed that this is one of the reasons why most of the best American engines are of the single-bank air-cooled radial type.

The forgings for a radial engine are simpler to make, and easier to handle than the castings of an in-line engine; the simpler problems of material and the fact that the machining operations are less intricate, with more frequent repetition, are considerations of primary importance if new firms, unaccustomed to aircraft engine manufacture, have to be hurried into production.

Cost of Repairs Less

For the same reasons the cost of repairs is lower also. The times for stripping and rebuilding a radial engine are considerably less than for an in-line water-cooled engine of equal power. The extent of the repair equipment, including jigs, tools and special tackle, necessary for a repair depot, is less for a radial air-cooled engine, a matter of prime importance for the outlying base of an air force or a commercial operating company. The air-cooled engine, and especially the large air-cooled radial, can also be installed more easily than the corresponding water-cooled engine which entails the making of water connections, etc.

Supercharging and gearing, both comparatively recent additions to aircraft engines, seem to present less serious dynamic problems on air-cooled radial engines than on water-cooled in-line engines, and fit neatly into the structure of the power unit. It is considered that in both cases this is more a matter of luck than design, and is chiefly due to the short crank shaft whereby serious harmonics are avoided. The air-cooled engine is at a further advantage when employing a supercharger, inasmuch as it has a sufficiently large cooling capacity to deal with the reduced cooling at high altitudes with the amount of supercharging which is practicable today. In the case of the water-cooled engine a considerable amount of radiator surface must be added when a supercharger is used.

Weight Considerations

(b) *Light Weight.*—The specific weight of large air-cooled radial engines of from 300 to 600 hp. is far better than that of any other proved type of aircraft power unit. A modern 450 hp. air-cooled radial engine complete weighs 30 per cent less than a corresponding in-line water-cooled engine with an allowance of 0.56 lb. per b.h.p. for water and radiator. In view of the inherently low load-carrying capacity of all aircraft this saving in weight is of the highest importance on all types.

(c) *Absence of a Water System.*—The elimination of the water system with its attendant radiator, water pump and piping, is an obvious advantage, but the problem of the "plumbing," as the Americans aptly describe it, goes a good deal deeper.

The tendency for water leaks to occur in a power unit mounted on such a light and "live" structure as an aeroplane is a continuous source of trouble. Up to

the time the Imperial Airways Company adopted air-cooled engines, 30 per cent of their engine failures were attributed to this one cause. Owing to the thin sections of water jackets, radiators, etc., water must be drained in frosty weather on all aircraft lying in the open, a tedious operation on such craft as flying boats.

The efficient working temperature range of an air-cooled engine is two and a half times that of a water-cooled engine, a matter of great importance in extreme climates, and all the Scandinavian countries have changed to air-cooled engines during the past three years, with marked improvements; the Royal Air Force in Iraq and India have now also been equipped with air-cooled engines.

As an interesting example of flying conditions in Scandinavia, it may be mentioned that military competitions were held in Sweden under winter conditions in the Arctic region. The machines, mounted on skis, were left out in the open all night under a military guard, and the temperature was down to 20 deg. Fah. below zero. When permission was given to commence starting operations the machines with air-cooled engines were in the air in under three minutes, while the best time for a water-cooled engine machine was 38 minutes, and in some cases steam had to be pumped into the jackets before filling up with hot water.

Corrosion Ever Present

Corrosion is an ever present trouble, and owing to the very thin metal sections employed, may be serious; in some very hot countries it is sometimes more difficult to obtain supplies of suitable water than to obtain fuel.

With the introduction of wing radiators as used on the Schneider Trophy racing machines, the water-cooled engine has a considerable advantage over the air-cooled engine in that the surplus heat from the engine is dissipated at a negligible drag; such a form of cooling has not proved practicable up to the present, however, for anything but specialized racing machines. The radiating surfaces are necessarily large and vulnerable and are only a few thousandths of an inch thick. The Americans tried this arrangement on their "Scout" machines, but abandoned it as being too unreliable.

(d) *Service Qualifications.*—There are two important service qualifications which the air-cooled radial engine fulfills—maneuverability and quick get-away. Considerably better maneuverability is possible with the short air-cooled radial engine than with an in-line water-cooled engine of corresponding power.

Owing to high mechanical efficiency which results from the use of a short shaft, and the shorter warming-up period necessary with air cooling, an aircraft fitted with an air-cooled radial engine can get away very much more quickly than one fitted with a corresponding water-cooled engine. This is a matter of the utmost importance for a ship's fighter launched from a gun turret, or for a night fighter. The latest types of water-cooled in-line engines require a warming-up period of considerable length, and in extremely cold climates some form of preliminary heating has to be used.

England's Road Traffic Act Includes Compulsory Liability Insurance Law

Commissioners have power to refuse bus and truck license to vehicles which not only are unsuitable but which are considered in excess of existing public requirements

By M. W. Bourdon

MANY important departures from the existing motor legislation in England and Scotland will be brought into effect at various dates in the near future by the Road Traffic Act, which has now passed through all stages in both the House of Lords and the House of Commons and has received the Royal Assent. It has been under discussion for over six months and has been modified appreciably in certain sections since the bill was introduced.

The "no speed limit" and compulsory insurance sections will come into operation on Jan. 1 next. Certain other sections will be operative on Nov. 1, while the section dealing with bus and coach control will come into force on March 1, 1931.

Compulsory insurance will be effected through insurance companies approved by the Ministry of Transport and will apply to the vehicle, no license for which will be issued unless a certificate of insurance is produced with the license application; the certificate will have to be produced by the driver for the time being upon demand made by a police constable in uniform, or at a police station within a few days of grace. The insurance policy may cover the liability of the owner while driving and of any other person driving with his consent. If a "named driver" policy is taken out, the owner will commit an offense if he allows any other person than the named driver to drive.

As an alternative to an insurance policy in respect of each vehicle, owners of fleets of trucks or buses may deposit a security with the accountant general to the value of from £5,000 to £25,000 according to circumstances.

The part of the act relating to the licensing and control of buses and coaches gives the traffic commissioners of each area powers that have not been possessed hitherto by any licensing authority except in London. They have the power to refuse licenses not merely to vehicles they consider unsuitable in any way, but also where they consider that the requirements of the public are already complied with by existing services. Thus they will prevent undue competition between bus and coach companies and also between road and rail. All schedules of operat-

English Insurance Law

No speed limit for passenger cars.

Heavier penalties for dangerous driving.

30 m.p.h. limit (instead of 20 m.p.h.) for buses, coaches and pneumatic-tired trucks.

Compulsory liability insurance for all classes of vehicles.

Declaration as to physical fitness to drive required from applicants for driving licenses.

Control of bus and coach services by traffic commissioners in each of twelve areas instead of local and county licensing.

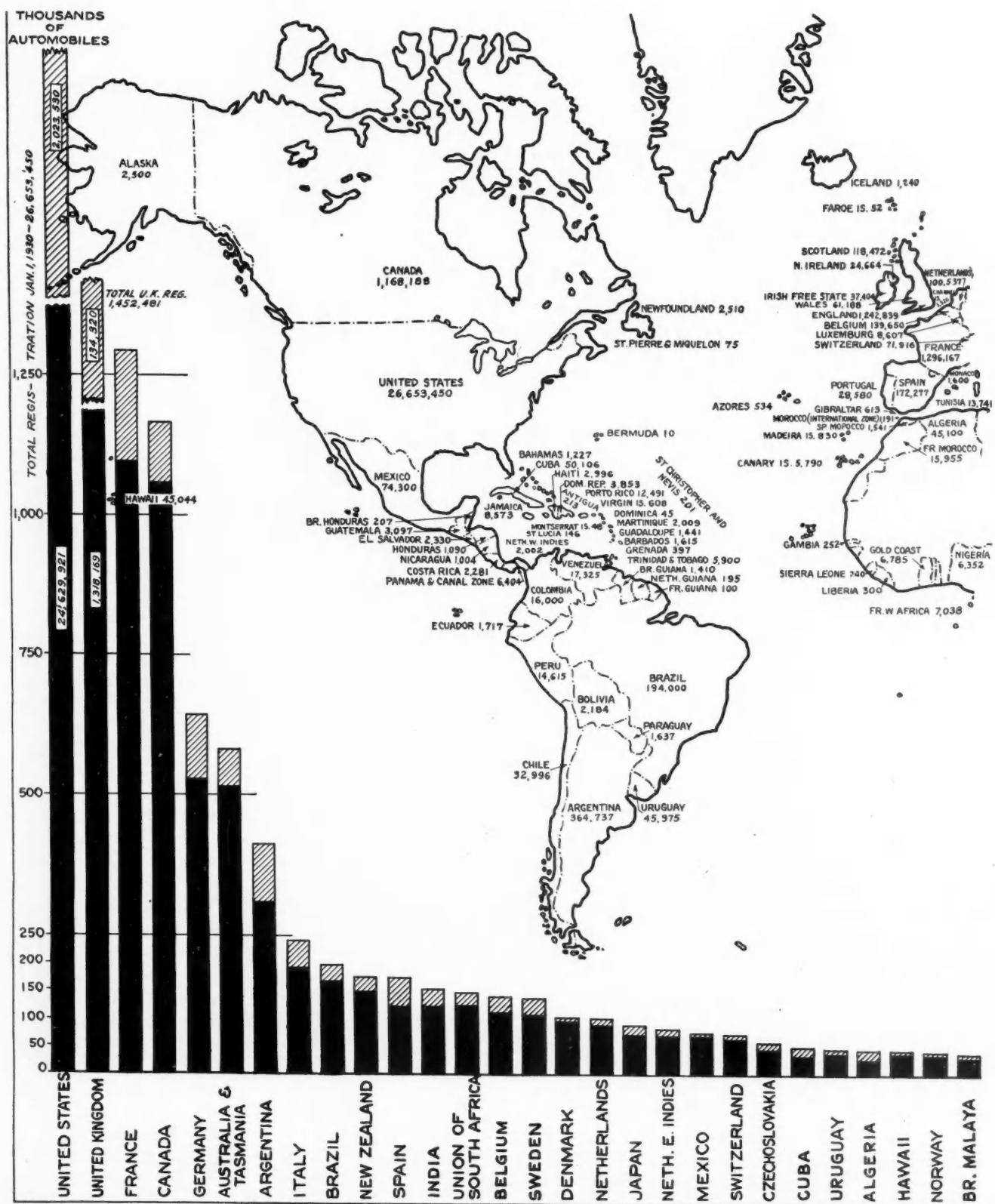
ing times and stops on long-distance runs must receive their approval, and no schedule will be approved if it obviously necessitates the 30 m.p.h. speed limit being exceeded at any part of the individual journey.

A vehicle licensed in any one area may not run in another without license from the commissioners of the additional area, though it is the intention to secure cooperation between the area commissioners to facilitate the running of long-distance services. The traffic commissioners will appoint inspectors, who will conduct expert examinations periodically of the licensed vehicles, which may be held up at any time for inspections of mechanical details.

The effect of this section of the act, it is expected, will be to eliminate the small owner and to encourage mergers between the big operating companies and between the latter and the railroads. In anticipation, the railroads have already secured an interest in the majority of the biggest bus and coach companies, though as a rule it is not a controlling interest.

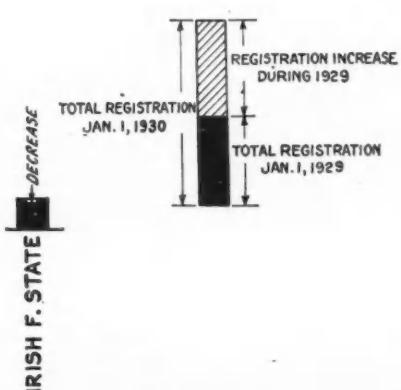
In addition to being empowered to issue regulations on a number of points specified in the act, the Minister of Transport is to prepare and publish a "Highway Code" which will consist of suggestions as to rules of conduct on the part of drivers. This code will not have the force of law, but if it is transgressed the fact will be taken into consideration as evidence when and where legal action is instituted.

World Motor Vehicles on January 1, 1930



Totaled 35,127,398*

Compares with 1929 estimate of 32,034,572, Automotive Division, Department of Commerce, finds + +



* INCLUDES PASSENGER CARS, TRUCKS, AND BUSES.
(2,623,479 MOTORCYCLES IN USE JAN. 1, 1930 NOT INCLUDED HERE). FIGURES BASED ON GOVERNMENT STATISTICS OR OTHER BEST AVAILABLE DATA.

U.S. BUREAU OF FOREIGN & DOMESTIC COMMERCE (D.D. 4950)

JUST AMONG OURSELVES

No Sign of Wavering From Sound Economics

TOURING about the automobile factories these days doesn't leave one with any feeling that the Promised Land is just around the corner so far as sales acceleration is concerned. Relatively low production schedules and curtailed employment still are the general rule, and immediate advances of notable proportions are not expected.

A week and a half in the Middle West, however, has brought one definitely encouraging thought. The industry is going through this period of depression without resorting to any economically unsound, artificial attempts to move merchandise regardless of future cost. There is no indication that foolishly liberal financing terms are being injected into the selling situation. Used car trading, while still a bit wild in some instances, on the average is being conducted on a more conservative basis than for several years past. Cars are not being forced on dealers. Retail inventories of both new and used cars as a consequence are in excellent condition.

While wandering through this particular valley of economic shadow, the automotive industry has not been and is not mortgaging its future!

Industry Stands Ready To Benefit by Upturn

THIS fact is the real bright spot which shines out of the current clouds. The industry as a whole has its house in order. It

will profit almost immediately from any upturn whatever in general business.

It is reasonable to expect, then, that the tone of the car, truck and parts manufacturing industry will improve rather rapidly as improvement in the general situation takes place. And if Roger Babson is right, such improvement won't be so very long in coming.

Oppose Undue Liberality In Financing Terms

PARTICULARLY encouraging is the conservatism evident in retail financing of car and truck purchases. Men prominent in both the financing and automobile fields are almost unanimously opposed to undue extension of terms at the present time.

Writing in opposition to a suggestion that more liberal financing terms be used to stimulate passenger car and truck sales at this time, for example, C. C. Hanch, general manager, National Association of Finance Companies, and a former automobile company executive of importance, stated the other day:

"Much experience, represented by statistics collected during several years, shows that the harm done would be considerable. The experience has been crystallized in the form of 'standard terms' now universally recognized by the industry. The statistics show that a loosening of terms is invariably followed by a surprising increase in defaults and repossession losses."

"It can be confidently antici-

pated, therefore, that this suggestion (i. e., reducing initial payments and extending time to complete payments), if put into effect, would result in heavy losses to dealers and finance companies. . . . Furthermore, this condition would not be merely temporary, because the nature of competition is such that it is much easier to get into an unhealthy situation of this sort than it is to get out of it again."

Mr. Hanch is right. And the industry as a whole agrees with him. The future is not being mortgaged.

Time to Deepen Frown on Mud-Slinging Competition

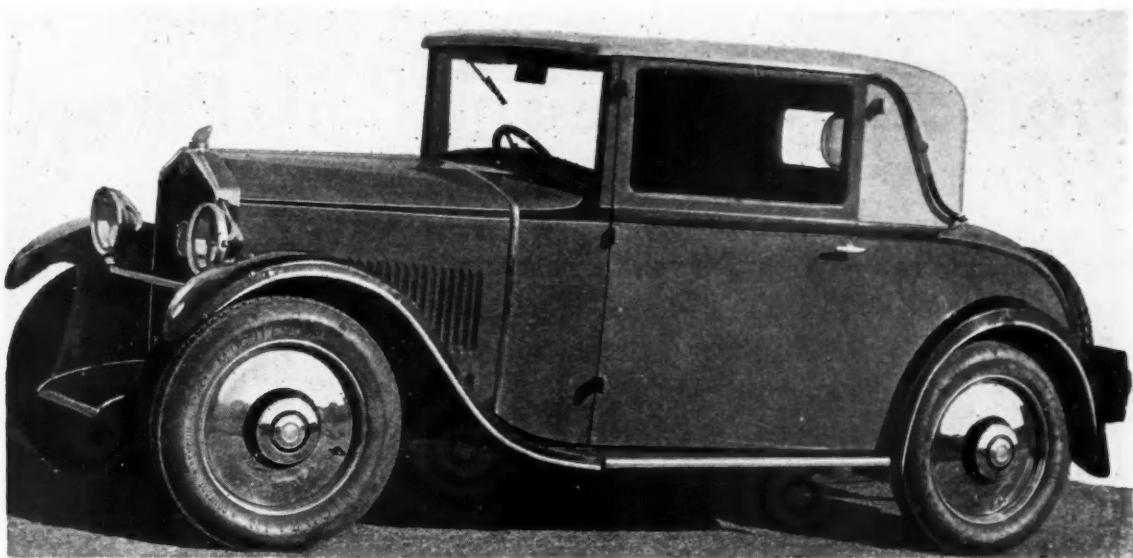
WITH business slow and competition therefore keener than ever, the old urge to knock competitors and circulate unfavorable rumors grows stronger in retail salesmen.

We heard of a case recently where one car salesman had a \$300 deposit from a customer on a new car to be delivered within a few days. Sales manager from a competitive dealer got to the prospect the next night and informed him that the company manufacturing the car he was about to purchase was selling out its present stock and then would close its doors.

The statement was 100 percent untrue.

Similar incidents tend to become too common under sales conditions such as exist today. When mud-slinging gets started no company, however big or sound, can avoid getting splattered more or less. Home office factory men long since discontinued this sort of thing among themselves and for a good many years have frowned on its existence in their retail organizations. It does everybody harm and nobody ultimate good. The frown might well deepen during 1930.

—N. G. S.



The Mathis coupe to be built by Durant Motors, Inc. No announcement of the manufacture in this country of the Mathis trucks was made. The French company produces 104 cu. in. and 182 cu. in. commercial chassis of 1, 1½ and 3-ton capacity

Durant Will Build Midget Mathis

Contract to build 100,000 small cars closed with French manufacturer ++

W. C. Durant elected president ++

PRODUCTION is to start immediately on 100,000 Mathis automobiles in the plant of Durant Motors, Inc., at Lansing, according to a contract which has just been signed between Durant and American Mathis, Inc. This announcement was made Tuesday by William C. Durant and followed his statement of August 6 in which he announced the retirement of practically the entire executive staff of his company and an important alliance between Durant and European motor car interests.

Preparations for the manufacture of the Mathis, a small French automobile (see *Automotive Industries*, Aug. 9), are now under way and deliveries are to start on December 1 of this year. At present the Mathis is manufactured only in the factory of E. E. C. Mathis, at Strassbourg, France.

At a meeting of the board of directors of Durant Motors, Inc., held at Detroit Tuesday morning the following officers were elected: William C. Durant, president; Ralph A. Vail, vice-president; Hal W. Alger, treasurer, and H. F. Herbermann, secretary. These men, with Robert C. Reuschaw, Lansing; Roy D. Kerby, Toronto; Edward VerLinden, Detroit; Norman DeVaux, Oakland, California; T. S. Johnston, New York, and E. E. C. Mathis, Paris, France, will constitute the board.

The Durant Motor Company of Michigan has been

awarded the contract to build for American Mathis, Inc., 100,000 of the small automobiles, it was announced by Durant. It was also announced that the Durant Motor Company of California had secured the exclusive rights to build the Mathis cars for the Pacific coast.

The Mathis company is one of the oldest in Europe and fourth in the volume of production in France. It was founded in 1899 and was the first to produce a small car. The success of this company in the midget car field has been phenomenal, Mr. Durant said.

In 1913 the Mathis won the Grand Prix in the small car class and since 1923 has held the world's record for small car gasoline consumption. The car is slightly larger than the Austin with a seat nearly two inches wider than a Ford. It is a comfortable, easy-riding car that will do better than 55 m.p.h. The tread is wide enough to insure safety at maximum speeds.

The Mathis will be built in one chassis only, with coupe, sedan and delivery van bodies interchangeable. The car is now on exhibition at the factory and will remain there until August 23. It will be displayed in

(Turn to page 283, please)

Front Drive Designed to Permit Short

Hinsdale Smith develops unit with four-speed transmission located over differential, economizing space in direction of vehicle axis

THE front-wheel drive described in this article is due to one of the pioneers of the automobile industry, Hinsdale Smith of Springfield, Mass. The illustrations shown must be regarded as sketches showing the general mechanical arrangement of the parts and not as fully detailed drawings. It will be noticed that the transmission, which is a four-speed one, is located over the differential, which economizes space in the direction of the vehicle axis and permits of the use of a much shorter wheelbase than would otherwise be possible. This is the characteristic feature of the new design.

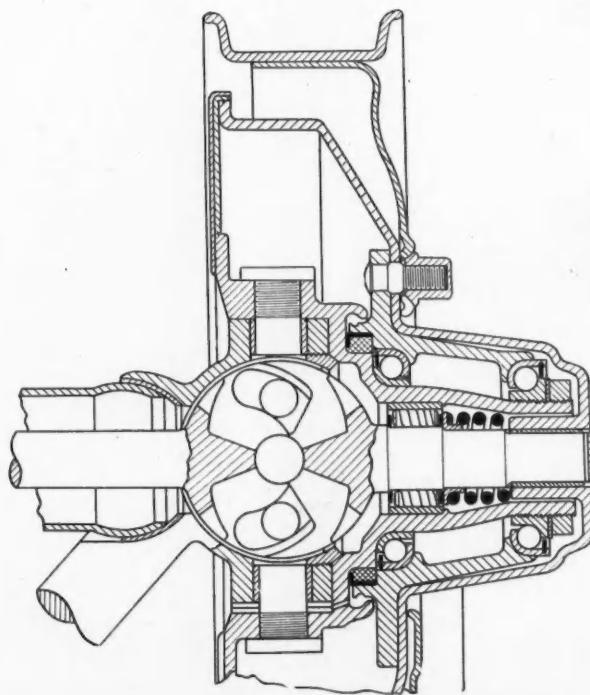
A shaft piloted in the forward end of the crank-shaft extends entirely through the housing containing the elements of the change-speed gear and of the final drive by worm gear. This shaft, of course, carries the driven member of the friction clutch, which is not shown in the drawing, in the clutch housing cast on to the transmission-and-drive housing.

The first reduction pair of gears is located in a separate compartment back of the bearings supporting the rear ends of the two shafts of the transmis-

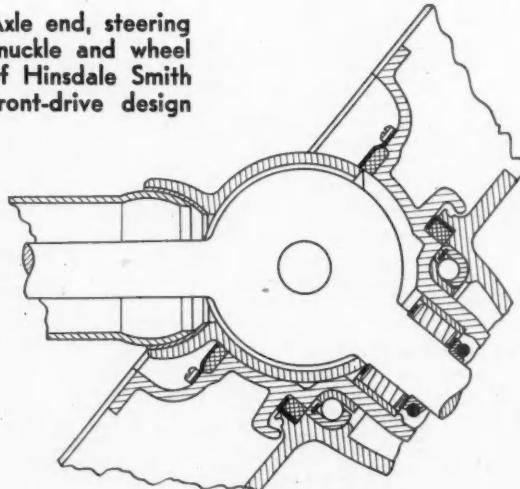
sion. The pair of gears directly in front of these bearings, which are engaged by shifting the one on the upper, splined shaft toward the left and into mesh, give the low forward speed. The pair of gears at the forward end of the transmission housing give the second intermediate forward speed. Of these two gears the upper driving one normally revolves free on its shaft but can be locked thereto by means of a positive clutch member sliding on the splined shaft, while the lower driven one is formed integral with the driving worm. The two gears, of course, remain in mesh constantly.

The first intermediate speed gear and the direct-drive clutch are enclosed in a separate compartment at the forward end of the transmission housing. It will be noticed that the worm is mounted free on the shaft on two Hyatt roller bearings, but that the two members can be coupled together by means of a conventional positive clutch composed of one internal and one spur gear, the latter being shifted toward the left (rear) for the purpose.

If this clutch member is shifted toward the right from the position it is shown in the drawing, it then engages with an internal gear which is supported eccentrically to the pinion in the housing by means of a roller bearing of large diameter. The internal gear



Axle end, steering knuckle and wheel of Hinsdale Smith front-drive design

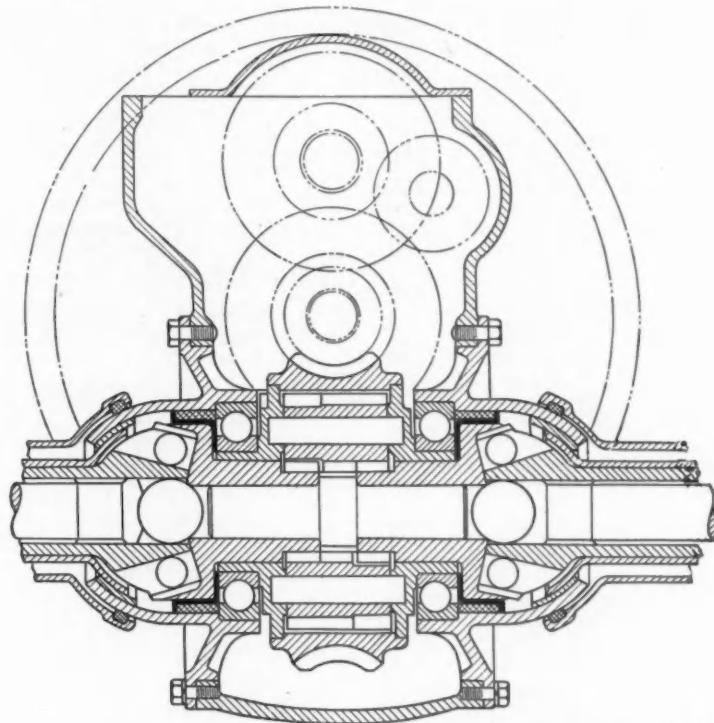


Wheelbase

referred to is really a combination internal gear and spur pinion, for the gear crown, in addition to the internal teeth, carries spur teeth on its outside. These spur teeth mesh with internal teeth of a gear secured to the worm by means of fillister-head screws. Evidently all four gears of the two internal sets revolve in the same direction, and this therefore also is a forward speed—the first intermediate one.

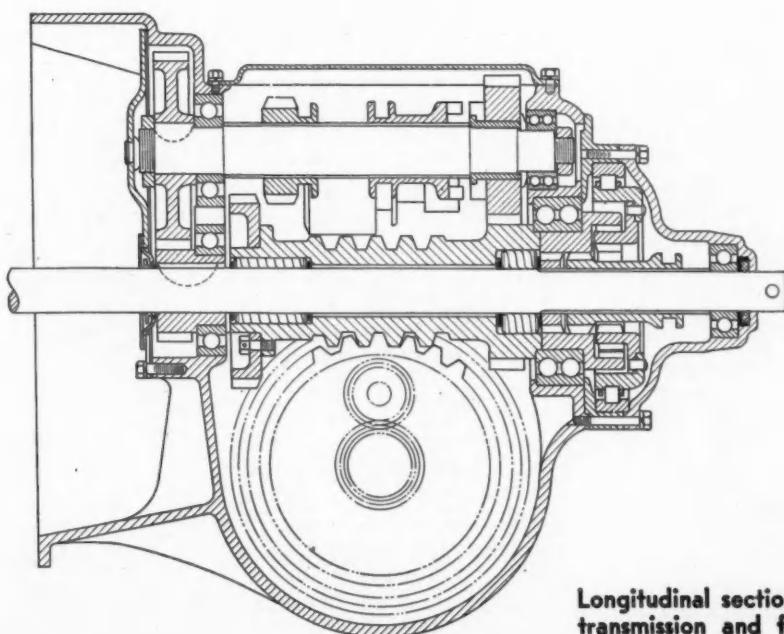
A pair of idler gears for the reverse is sketched in the upper part of the housing. Appropriate shifting mechanism meshes these two gears with the two gears on the upper shaft inside the transmission housing.

Among the advantages claimed for this design, aside from the one already mentioned, of shortening the wheelbase required, are that the shift is standard and that three of the four forward speeds are silent, two being through helical gears and the third through internal gears. All gears are located adjacent to bearings and are therefore well supported. Moreover, no extra shafts or gearing are required for cranking the engine, the forward end of the clutch shaft being provided with a pin to take the starting crank as shown.



Transverse section through final drive gear and differential

As already pointed out, the final drive is through a worm and wheel, the worm wheel being mounted on a differential of the spur type. There is a solid front axle which is developed at its outer end to form two spherical shells. One of these shells, the larger one, houses the universal joint at the wheel end and is also formed with two drilled hubs in which the knuckle pins have a bearing. The other spherical shell forms a socket for a sphere formed on the end of the front axle tube. Heretofore the driving shafts in front-wheel-drive cars have been exposed, as a rule, but Mr. Smith thinks they should be enclosed. These axle tubes or covers retain oil and grease and keep dust and dirt out of the axle mechanism. A hollow axle spindle is pivoted to the axle end by the knuckle pins. The short driving shaft extending through the spindle is mounted in same in a Hyatt roller bearing. All universal joints are of the uniform-velocity-ratio type. Other details of the design may be seen from the drawings.



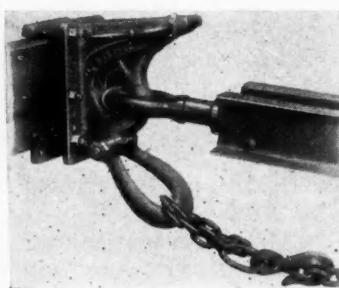
Longitudinal section through transmission and final drive

NEW DEVELOPMENTS—AUTOMOTIVE

Weber Trailer-Coupling Hook

THE Sterling Motor Truck Co., Milwaukee, Wis., has secured manufacturing rights for the Weber trailer-coupling hook from the Weber Trailer & Mfg. Co., Los Angeles, Calif., and will distribute it throughout the territory east of the Rocky Mountains.

The Weber hook, which has been on the market on the Pacific Coast for many years, requires only one man to couple or uncouple it. Coupling is effected by releasing a safety pin; it is not necessary to touch the hook while backing the drawbar eye into position, hence danger of personal injury is eliminated. To uncouple the trailer the locking pin is raised. It is claimed that while the locking pin is in position there is no possibility of the trailer becoming uncoupled.



The hook is made of an alloy steel and is said to be able to withstand a drawbar pull in excess of 35 tons, as shown by tests, which is greater than the maximum stress that can be placed upon it under driving conditions. It fits any standard trailer pole eye, and the extra universal device enables it to fit the old-style and to accommodate either the pole eye or the safety chain.

Decking Material In Grain Effects

A N innovation in decking for automobiles is the printing of grain effects on Fabrikoid to simulate a woven fabric. This new development is said to meet the rigid requirements of a collapsible top and at the same time to be equally satisfactory for solid tops where a smart appearance in other than black is desired. It is developed in beige tones and is a double texture product, the combining medium being vulcanized rubber cement. The surface is coated with an especially prepared pyroxylin film.

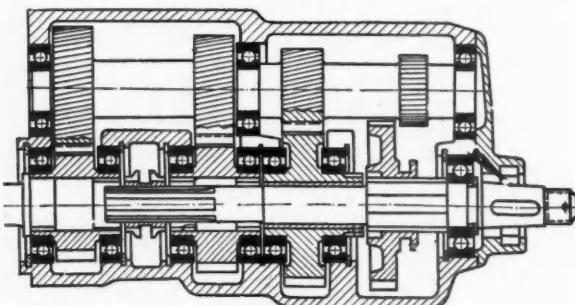
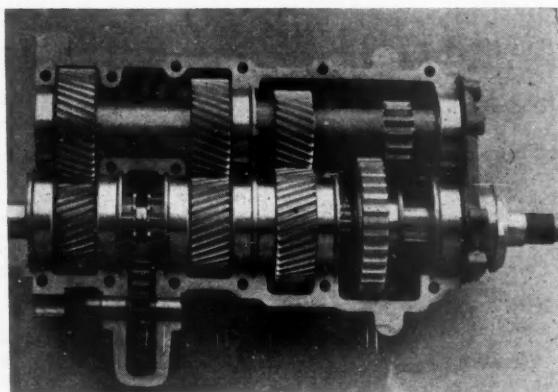
We are in-



formed that its durability has been proved by many laboratory tests, such as accelerated aging, flexing under pressure, continual folding and hydrostatic resistance. Long time exposure to heat and cold also has been used to test out the efficacy of the fabric.

Four-Speed Transmission By Zeppelin Works

THE Zahnradfabrik Friedrichshafen, a subsidiary of the Zeppelin Works, has recently placed on the market in Germany a four-speed transmission in which silent operation is obtained on three speeds. A sectional view of the transmission is shown herewith. It will be seen that three pairs of gears are cut with helical teeth and remain constantly in mesh. Each of the three gears on the primary or upper shaft is mounted between two annular ball bearings on which the end thrust is taken. Engagement of the different gears is effected by means of a clutch member sliding on a splined portion of the shaft and provided with spur teeth which engage into an in-



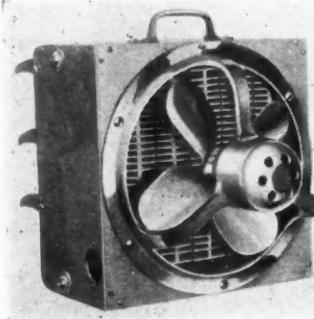
ternal teeth cut in the hub of the gear. The transmission is so designed that the first reduction gears and the third speed gears are interchangeable, which makes it possible to use the same parts for a transmission with direct in third or direct in fourth.

The drawing is reproduced from *Automobil-technische Zeitschrift*.

PARTS, ACCESSORIES AND PRODUCTION TOOLS

American Foundry Electric Heater

THE American Foundry Equipment Company, Mishawaka, Ind., has recently placed on the market a new electric space heater for industrial and commercial uses. In the production of this device, alloy heating strips are cast integral with composite fins of aluminum alloy to form a single smooth casting that will allow a free flow of air through its channels.

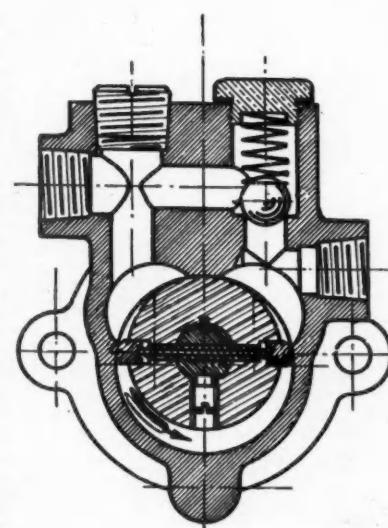


Castings of this type are assembled into a cabinet. Back of this cabinet there is an electric fan which forces a current of air through the heated fins and out into the space where the heat is desired. This heater can be used either as a permanent installation or as a portable heating unit.

Evans Develops Rotary Fuel Pump

A NEW rotary type of fuel pump, made in three different designs for automobile, marine and aircraft engines, has been placed on the market by the Evans Appliance Company of Detroit. Oil is fed to the bearing at all times, for the double purpose of lubricating it and of sealing the pump chamber. We understand that the Bureau of Aeronautics of the U. S. Navy has tested the aircraft pump and approved of it for that use.

The single pump is for gasoline, the double for gasoline and oil, and in the triple pump are combined an oil-scavenger, an oil-pressure, and a



gasoline-feed pump. The company also manufactures a fuel pump for Diesel engines.

The Evans pumps are of a rotary vane, bypass type. The shaft, vanes, and rotors are of nitrallloy steel. In the automobile and marine pumps, the housing is a close-grained iron casting, while the aircraft pump housings are made of aluminum and provided with a light cast iron lining.

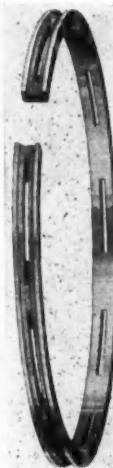
Delivery is always in direct proportion to the engine speed. A rated delivery as high as 135 gal. per hour at full throttle is offered. It is claimed that priming is almost instantaneous.

Perfect Circle "85" Oil-Regulating Ring

THE Perfect Circle Co., Hagerstown, Ind., has announced an addition to its line of piston rings, the "85" oil-regulating ring with compensating channel. It is stated in the announcement that with the increase of driving speeds in general there arose a need for more oil to the cylinders, consequently provisions were made for throwing more oil into them. This, however, also increased the oil consumption materially and called for a better oil-regulating ring.

It is stated in the announcement that all pistons rock slightly in the cylinders in service, and this tends to cause the rings to wear oval on their pressure side, removing the sharp edge on which oil control is largely dependent. To minimize this the "85" is made with a comparatively wide groove, so that it bears only on narrow widths on both sides. The object of the compensating slot is two-fold. It permits of oil flowing freely from that part of the cylinder circumference which is flooded with oil to the opposite side, and it also renders the ring comparatively limber and able to adapt itself to the shape of out-of-round cylinder bores.

This new ring will be available in Ford and Chevrolet Six sizes from Aug. 15 on and for other makes of cars as soon thereafter as manufacturing arrangements can be made.



Bonney Chrome-Vanadium Tappet Wrench

THE latest addition to the wrench line of the Bonney Forge and Tool Works, Allentown, Pa., is a new chrome-vanadium tappet wrench, that is, an S wrench designed for use on valve tappets. These wrenches have different size openings in each end, and all openings are at a 15-deg. angle.

Automotive Oddities — By Pete Keenan

WALTER P. CHRYSLER
BEGGED AND BORROWED THE
MONEY TO PAY FOR HIS
FIRST CAR, WHICH HE
TORE DOWN 7 OR 8 TIMES
SO THAT HE COULD BUILD
A BETTER CAR FOR LESS
MONEY.

ARRESTED FOR
PASSING A RED LIGHT,
SAMUEL SONTAG ADMITTED
THAT HE'D NEVER HAD A
LICENSE IN HIS 14 YEARS
OF DRIVING IN PENNSYLVANIA



THE SMALLEST RACING AUTOMOBILE IN THE WORLD—
Weight 625 lbs.—52 inch wheelbase—24 inches high—39 inches wide—
yet can travel 91.2 miles per hour.



THE CAR WITH A CURSE
THE CAR IN WHICH THE ARCHDUKE
FRANCIS FERDINAND AND HIS WIFE
WERE ASSASSINATED IN SERAJEVO IN
1914. EVERY OWNER AFTERWARDS
WAS EITHER KILLED OR BADLY INJURED.



NEWS OF THE INDUSTRY

Plan Discussions Of Aero Problems

S.A.E. and A.S.M.E. Members Will Hear Number of Technical Papers

CHICAGO, Aug. 21—Capt. Frank Hawks will address the Aircraft Banquet of the Society of Automotive Engineers on Thursday evening, Aug. 28, at the Palmer House, Chicago.

The dinner will be a feature of the 18th National Aeronautic Meeting of the Society, held in conjunction with the Aeronautical Chamber of Commerce, Aug. 26-28, comprising a three-day convention. William B. Stout, president of the Stout Engineering Laboratories, Inc., will be toastmaster.

The importance of airplane spinning characteristics and control will be discussed pro and con in a symposium by Lieut. Carl B. Harper, of the Navy; Paul E. Hovgard and Temple Joyce, of the Berliner-Joyce Aircraft Corp.; Garland P. Peed, Jr., aeronautical engineer; H. A. Sutton, of the Aviation Corp., and Fred E. Weick, of the National Advisory Committee for Aeronautics. Dr. George W. Lewis will be chairman.

Speaking on The Possibilities of Radical Airplane Design, Mr. Stout will explain his ideas on the advantages to be gained by original design along the lines not as yet undertaken.

The methods employed in flight research and testing by the National Advisory Committee for Aeronautics at Langley Field, Virginia, one of the finest aeronautical laboratories in the world, will be discussed by J. W. Crowley, Jr., of that organization in a paper on Flight Research.

One of the methods to keep the weight of engines and airplanes to a minimum will be discussed in papers by Charles Ward Hall, president of the Hall Aluminum Aircraft Corp., and A. A. Gassner, chief engineer, Fokker Aircraft Corp.

Under the chairmanship of J. H. Geisse, vice-president of the Comet Engine Corp., the session devoted to engines will feature the paper on Manufacturing Costs of Aircraft Engines prepared by E. D. Herrick, chief engineer of the Lycoming Mfg. Co. Comparative Data on Powerplants for Motor Cars and Aircraft are to be presented by H. M. Crane, of the General Motors Corp.

The symposium on aircraft fuels will

be presented at the morning session, Thursday, and will include 15-minute discussions by E. E. Aldrin, Standard Oil Co. of New Jersey; C. S. Fliedner, Bureau of Aeronautics, U. S. Navy; S. D. Heron, Powerplant Division, U. S. Army Air Corps; C. M. Larson, Sinclair Refining Co.; W. A. Parkins, Pratt & Whitney Aircraft Co.; D. E. Day, Richfield Oil Co.; J. H. Doolittle, Shell Petroleum Corp., and E. W. McVitty, Pan-American Airways, Inc.

The National Air Races will be held under the auspices of the National Aeronautic Association by the Chicago Air Race Corporation, a non-profit organization formed especially to conduct the event.

Rules of the Federation Aeronautique Internationale will govern the races. Participation of Army, Navy, and National Guard planes and pilots has been assured, although civilian events will dominate the program.

More than 1500 members of the American Society of Mechanical Engineers will be here to attend a technical session.

Provision is being made to handle a record crowd and the aristocracy of the aviation industry is expected to attend the various meets.

Stewart Warner Has \$14,000,000 Assets

CHICAGO, Aug. 20—Consolidated balance sheet of the Stewart Warner Corp. as of June 30 shows current assets of \$13,979,512 and current liabilities of \$1,803,962. Included in the current assets are \$2,905,637 cash, \$929,452 in government securities and bankers' acceptances and \$715,665 in marketable securities.

Inventories are carried at \$6,346,064. Net earnings of the company in the second quarter, previously reported, were \$872,852, equivalent to 77 cents a share on the outstanding common stocks. Net earnings for the six months ended June 30 totaled \$1,528,862.

Milwaukee Ford Opens

CHICAGO, Aug. 20—The Milwaukee plant of the Ford Motor Co. reopened last week, 1000 men returning to work from the annual vacation period. August production calls for 1200 cars and an operating week of five eight-hour days. It is estimated production will be stepped up to 200 cars a day in September.

Reo Prepared for Trade Expansion

Wilson Tells World Sales Delegation of Strong Position

DETROIT, Aug. 18—Greatly enlarged operations are in store for Reo Motor Car Co., according to William Robert Wilson, general manager, in an address to a large gathering of Reo foreign distributors and sales representatives from all parts of the world, assembled here this week in convention.

He said Reo's largest year's volume in the past was approximately \$55,000,000, representing about 2½ times turnover of Reo's working capital. He saw no reason why this turnover should not be built up to 10 times, which would mean an annual gross volume of \$200,000,000.

Mr. Wilson said that the Reo factory has capacity for much larger production without additional expenditures, and that he believes the time is near when this entire capacity will be used.

Recently in its second-quarter statement, the company disclosed it had invested more than \$1,000,000 in new machinery since Jan. 1, and that engineering and experimental expenditures had proceeded on a normal basis as compared with 1929, in spite of the general business decline.

Ford and Isotta Rumored in Deal

PARIS, Aug. 20—"Argus," Paris automobile paper, said last week that Ford Motor Car Co. will soon be manufacturing Isotta Fraschini in Detroit, and that Ford cars will pour in great volume from Isotta's Italian factories.

To handle the plan, a new \$5,000,000 company is said to have been formed in Italy, 51 per cent owned by Isotta Fraschini Co. and the Italian Commercial Bank, 49 per cent by Ford. In this exchange of licenses is perhaps the neatest tariff evasion yet devised.

Hudson Dividend 75c

DETROIT, Aug. 21—Hudson Motor Car Co. declared a dividend of 75 cents per share, payable Oct. 1, to stockholders of record as of Sept. 11.

"Rotor" Principle is Used in Aeroplane

Experiments Based On Flettner Boat

NEW YORK, Aug. 20—A new type of airplane utilizing the rotor principle, successfully used by Flettner in driving his ship, instead of the ordinary wings, has been developed secretly aboard a barge in Long Island Sound.

These rotors, which extend from the side of the ship in a position similar to that occupied by the wings in ordinary airplanes, are rotated by a Gypsy engine placed in the center of the ship. There is also a single motor in the nose of the ship which supplies direction through a three-bladed steel propeller.

As the rotors rotate in the winds caused by the forward motion of the ship and the slipstream of the propeller, a section of reduced air pressure is caused above it while a section of increased air pressure is produced below, thus giving the required lift to raise the ship from the water.

The rotors are somewhat over two feet in diameter with flanges on the end of four feet diameter. The total span of the rotor is somewhat less than the wing span of conventional planes, but it is stated that the machine will lift nearly ten times the load of an airplane of equal weight or lift area.

It has been reported that Walter P. Chrysler is one of the men giving financial backing to this enterprise, although no information was obtainable from Mr. Chrysler's office.

C.I.T. to Finance Stearman Sales

WICHITA, KAN., Aug. 20—The Stearman Aircraft Co., one of the oldest manufacturers of aircraft and a subsidiary of the United Aircraft & Transport Co., has signed a contract with Commercial Investment Trust, Inc., to provide for the financing of instalment sales of Stearman aircraft.

Correction

LANSING, Aug. 18—Motor Wheel Corp. has paid regularly throughout this year a dividend of 75 cents each quarter, a rate established in 1929. The rate was erroneously given as \$2.00 a year in a recent issue.

Vesta Omits Dividend

CHICAGO, Aug. 18—Directors of the Vesta Battery Corp. have omitted the \$1.75 a share dividend due at this time on the preferred stock. The dividend is cumulative at the rate of \$7 a share annually. It was stated

that the dividend was passed so that the company might conserve its working capital until duration of the present business depression could be more accurately determined.

Plan Ambitious Events for Bennett Carnival

CLEVELAND, Aug. 21—One of the most ambitious programs for the Gordon Bennett Balloon Race has been drawn up for Aug. 31 and Sept. 1, with heavier and lighter-than-air craft activities, and a variety of new and novel stunts. Attempts at world records and formation flying and acrobatics by naval, army and commercial contingents will be given here at the Cleveland airport.

Gets Nirosta License

HARRISON, N. J., Aug. 20—The Driver-Harris Co. has been granted a melting license by the Krupp-Nirosta Co. for the production of Nirosta steel in castings, rods, sheet, strip and wire.

It is expected that some of this material will be exhibited in the Driver-Harris booth at the National Metal Exposition in Chicago, Sept. 22 to 26.

Austin Assets \$4,366,261

NEW YORK, Aug. 18—American Austin Car Co., Inc., reports total assets of \$4,366,261 and revaluation surplus of \$233,141 as of March 31, after giving effect as of that date to the proposed issuance of \$1,000,000 of 7 per cent convertible sinking fund notes with common stock warrants for \$970,000 cash. Current assets totaled \$2,304,338 and current liabilities \$295,495.

P&W Buys Gage Works

NEW YORK, Aug. 20—Pratt & Whitney Co. of Hartford, Conn., has purchased the John Sons Gage Works, Hartford, manufacturer of screw thread gaging equipment.

Kliesrath is Winner of Speedboat Cup

Automotive Executive Averages 52 m.p.h.

NEW YORK, Aug. 18—Victor Kliesrath, vice-president and general manager of Bragg-Kliesrath Corp. and a director of Bendix-Westinghouse Automotive Air Brake Co. and other Bendix subsidiaries, won the 28th annual gold cup speedboat race at Red Bank, N. J., last week with his boat, the Hotsy Totsy. The average speed of his boat in this race was 52 miles an hour.

In winning this race, Mr. Kliesrath nosed out the defending craft owned by Richard F. Hoyt, chairman of the board of Curtiss-Wright Corp. Mr. Hoyt's boat, The Imp, developed faster time than the Hotsy Totsy but was forced out by engine trouble caused by a burned-out bearing.

Bicycles Show Gain Over Motorcycles

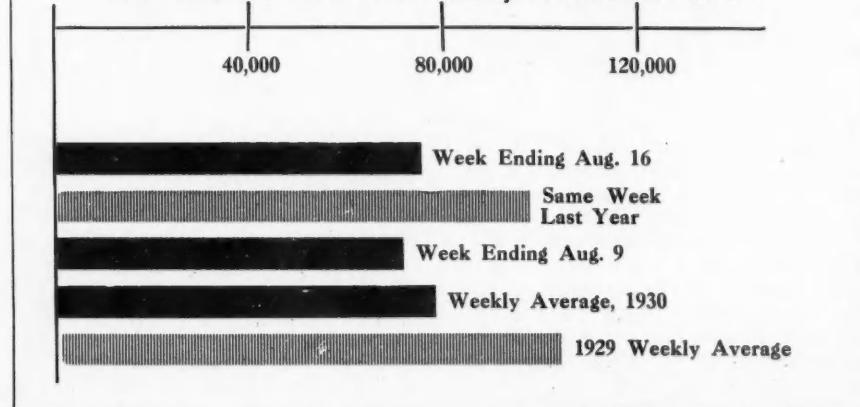
WASHINGTON, Aug. 21—Bicycles showed an increase in production and value in 1929 as against 1927 while the whizzing motorcycle showed a decrease, according to a report just issued by the Bureau of the Census.

The output of motorcycles in 1929 totaled 31,912, valued at \$7,542,820 as against 35,197, valued at \$8,000,683 in 1927, a decrease of 9.3 per cent in number and 5.7 per cent in value. The production of bicycles last year totaled 307,845, valued at \$6,183,773 as compared with 255,456, valued at \$2,742,375, an increase of 20.5 per cent in number and 6.6 per cent in value.

Reports Loss

NEW YORK, Aug. 21—Kelly-Springfield Tire Co. reports net loss for six months ended June 30 of \$587,610 after all charges.

Automotive Industries Weekly Production Chart



Casings Inventories 20 Per Cent Under 1929

Production Exceeds Shipments Slightly

NEW YORK, Aug. 19—Inventories of pneumatic casings on hand as of June 30 are estimated by the Rubber Manufacturers Association at 14,162,170, or 1.2 per cent, under May 31 of this year and 19½ per cent below June 30 of last year.

Production of casings during first six months of 1930 exceeded shipments by less than five per cent, as compared with nine per cent in the same period of last year. Shipments of pneumatic casings during the month amounted to 5,646,658 with production at 5,463,737.

Shipments during the first six months were 23.6 per cent under the same period of 1929.

Comparative figures for members of the association, assumed to represent 85 per cent of the entire industry, follow:

Pneumatic Casings—All Types

	Inven-	Produc-	Ship-	
	tory	tion	ments	
June 1930...	10,621,634	4,097,808	4,234,994	
May 1930...	10,745,389	4,573,895	4,173,177	
June 1929...	9,121,776	5,019,472	5,338,056	

Inner Tubes—All Types

June 1930...	10,884,444	3,969,972	4,212,082
May 1930...	11,081,523	4,428,367	4,058,847
June 1929...	12,869,659	5,215,088	5,352,393

Balloon Casings

June 1930...	8,363,097	3,513,719	3,496,791
May 1930...	8,323,436	3,955,883	3,495,178
June 1929...	9,274,926	4,223,416	3,829,506

Balloon Inner Tubes

June 1930...	8,107,920	3,318,464	3,297,573
May 1930...	8,098,115	3,745,131	3,289,384
June 1929...	9,504,071	4,049,173	3,510,947

High Pressure Inner Tubes

June 1930...	2,258,517	584,089	748,203
May 1930...	2,421,953	618,012	677,999
June 1929...	3,362,861	1,345,857	1,812,907

June 1930...	2,781,524	641,508	914,909
May 1930...	2,983,388	683,236	769,463
June 1929...	5,558,455	1,661,897	2,168,337

Yellow Cab 6 Months' Profits Near Million

CHICAGO, Aug. 20—Net profits of the Chicago Yellow Cab Co., Inc., for the six months ended June 30 totaled \$952,855 after depreciation, Federal taxes and all other charges, equivalent to \$2.38 a share on 400,000 shares of capital stock outstanding, or covering nine and one-half dividend requirements at the present annual rate of \$3 a share.

In the corresponding period of 1929, which was the best in the history of the company, net earnings were \$1,196,691, or \$2.99 a share.

The comparative showing is considered very satisfactory in view of the business recession and the fact that operating cab companies in a number of other large cities have experienced a rather sharp decline in profits.

For the quarter ended June 30 the

net income was \$40,476, or the equivalent of \$1.05 a share. This compares with a net profit of \$532,672 in the second quarter of 1929, both equal to \$1.33 a share.

F.W.D. Finds Increased Advertising Profitable

MILWAUKEE, Aug. 18—A gain of 26.2 per cent in truck sales for the first half of 1930 over the same period of 1929 is reported by the Four Wheel Drive Auto Co., Clintonville, Wis. July and August bookings are above those of last year. This is said to be partly the results of the decision of Walter A. Olen, president, at the beginning of 1930, to increase appropriations for magazine and direct-mail advertising by \$40,000, place \$100,000 additional in the sales budget, and add 30 men to the sales organization. The plant is running 10 hours a day and besides has a small night crew at work.

Small Car Sales Lead in Germany

BERLIN (special)—In the first four months of this year, according to an official German publication, 27,200 new cars were sold, of which 40 per cent were small cars with an engine output of up to 20 hp. Of this number, half were small Opel cars.

Thirty per cent of the new registrations were foreign cars or units assembled in Germany. German makers of medium size cars found small car sales made heavy inroads into their former business.

To Build Southern Air Route

WASHINGTON, Aug. 20—Pursuant to the recommendation of the Inter-departmental Committee on Civil Airways that a southern transcontinental airway be established, and as a result of the action of that body in determining the air mail route, the Aero-nautics Branch will construct the airway from Birmingham to San Diego, via Fort Worth, El Paso, Douglas, Tucson and Phoenix, it was announced today by Clarence M. Young, Assistant Secretary of Commerce for Aero-nautics.

Continental Earns \$2.18

CHICAGO, Aug. 18—Continental Roll & Steel Foundry Co. reported net earnings for the six months ended June 30 of \$2.18 a common share. The company was formed in June through the acquisition of the assets and business of the Duquesne Steel Foundry Co., Hubbard Steel Foundry Co. and Wheeling Mold & Foundry Co.

Steel Base Proposed For Highway as Test

Illinois to Use Metal Foundation

WASHINGTON, Aug. 18—Steel foundations for public roads is the latest development in prospect in highway engineering. The first test road embodying this new steel construction is being built on a section of the Sangamon County, Illinois, highway system. The road will have a prepared subgrade on which the steel base and curb will be laid. Next will follow a mastic sand cushion and a layer of 2½ in. or 3 in. brick, with an asphaltic filler.

Whippet Announces Improved Models

TOLEDO, Aug. 18—Among the improvements of the new Whippet are two-way hydraulic shock absorbers, Bendix two-shoe brakes, new upholstery, new exterior finishes, adjustable front seats on the sedan model and rubber engine mountings.

The new exterior finishing is of particular interest, as the top is finished in the same color as the body panels, representing a radical departure from the usual standard of painting the top black, regardless of the color of the body.

Prices remain unchanged.

Ford Announces Dump Bodies

DETROIT, Aug. 18—Addition of five dump body trucks to the line of standard Model AA 1½-ton trucks was announced today by the Ford Motor Co. They offer a wide range as to price, hoisting method and capacity and are designed to meet the requirements of most every kind of hauling in which a body of this type is used.

The Ford dump trucks include an hydraulic dump body with hoist of 1½ tons normal operating capacity; a heavy duty hydraulic dump body; a mechanical dump body; gravity dump body, and hand dump body.

Bodies are made of one piece of steel with no center or bottom seams to interfere with the free flow of materials.

Syracuse Plant for Sale

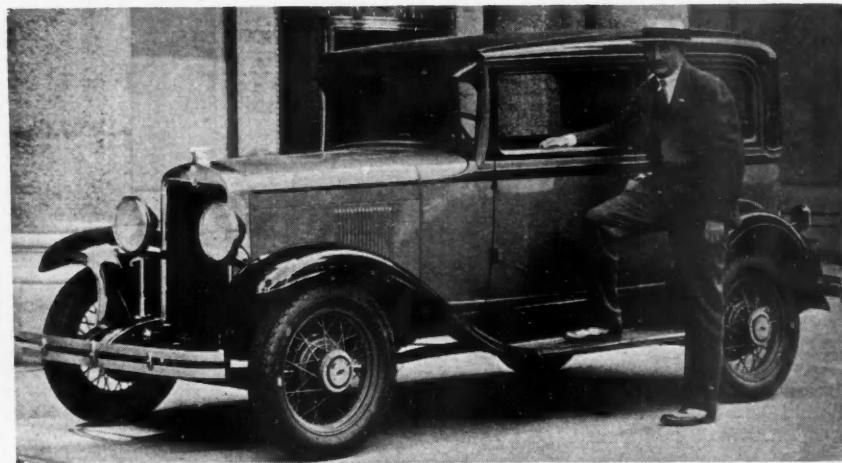
NEW YORK, Aug. 18—Land, buildings, machinery and equipment of the Syracuse Perfection Castings, Inc., successor to Smith Wheel, Inc., Syracuse, will be sold at public auction on Tuesday, Aug. 26. Machinery and equipment will be sold piece by piece. Land and buildings will be offered as a whole and then in four separate parcels.

Firestone Predicts Renewed Activity

End of Business Slump is Expected

CAMBRIDGE, MASS., Aug. 18—Harvey S. Firestone told the Cambridge Industrial Association today that the present slump in business would soon be succeeded by greater prosperity than America had known for 10 years.

To end depression, he advocated good, hard work and readjustments by business leaders to meet the changing conditions, such as reduced prices and reduced overhead.



W. S. Knudsen, president and general manager of the Chevrolet Motor Co., with the 2,000,000th Chevrolet six. A new production record was established + + + +

Michigan Steel Shows \$2.86 Net for Half

DETROIT, Aug. 18—Michigan Steel Corp. has reported net profit for the six months ended June 30, 1930, after all charges including Federal taxes, of \$628,436. This is equivalent to \$2.86 per share on the 220,000 common shares outstanding during the period and payment will be due on new \$1,180,535, or \$5.36 per share, on the same number of shares during the first six months of last year.

Riker Estate is \$1,650,000

FAIRFIELD, CONN., Aug. 18—Mrs. Edith Riker is named as the principal beneficiary in the will of her husband, Andrew L. Riker, former designer and engineer of the Locomobile Co., under the terms of the will, which was filed for probate today. The entire estate is valued at \$1,650,000.

British Statistics Published
LONDON, Aug. 18—"British Motor

Industry," a statistical summary of the automotive industry in Great Britain, has been published by the Society of Motor Manufacturers & Traders, Ltd., London.

Perfect Circle Income \$430,000

HAGERSTOWN, IND., Aug. 18—The Perfect Circle Co. reported net income for seven months ended July 31, \$430,020, after charges and taxes, equivalent to \$2.64 on 162,500 shares.

Automobile Financing Shows Slight Recession as Compared With June, 1929

WASHINGTON, Aug. 19—The number of automobiles financed during June as reported to the Department of Commerce by 439 automobile-financing organizations, was 332,852 on which \$141,888,578 was advanced as compared with 344,220 on which \$145,346,014 was advanced in

May and 384,520 on which \$178,983,835 was advanced a year ago.

Wholesale financing during June was \$64,915,231 as compared with \$82,803,381 in May and \$63,216,578 a year ago.

This summary will be subject to revision in subsequent issues as re-

ports are received from additional concerns. Detailed statistics are given below by months, new cars and used cars shown separately. Some of the smaller firms found it impossible to segregate their operations; their totals are shown in the unclassified group in the following table:

1929	Wholesale Financing Volume In Dollars	Retail Financing							
		Total		New Cars Financed		Used Cars Financed		Unclassified	
		Number of Cars	Volume In Dollars	Number of Cars	Volume In Dollars	Number of Cars	Volume In Dollars	Number of Cars	Volume In Dollars
January	\$35,889,941	155,630	\$73,166,768	78,288	\$48,677,337	68,859	\$20,734,372	8,483	\$3,755,059
February	47,919,535	189,183	90,489,411	103,079	61,736,873	76,480	24,595,774	9,624	4,156,764
March	61,097,083	302,672	141,076,601	165,898	96,639,213	121,194	37,815,473	15,580	6,621,915
April	74,714,226	378,790	171,931,720	204,949	116,811,926	154,843	47,248,843	18,998	7,870,951
May	72,098,629	398,561	183,580,808	212,239	125,096,943	167,567	50,830,658	18,755	7,653,207
June	63,216,578	334,520	178,983,835	203,632	121,842,467	164,023	50,205,848	16,865	6,935,520
Total (6 mos.)	\$354,935,992	1,809,356	\$839,229,143	967,085	\$570,804,759	752,966	\$231,430,968	88,305	\$36,993,416
July .....	.....	388,747	\$180,205,492	211,296	\$125,005,223	162,451	\$49,077,845	15,000	\$6,122,424
August .....	.....	347,144	162,894,966	183,921	111,664,809	149,413	45,652,348	13,810	5,577,809
September .....	.....	298,286	138,717,971	158,021	94,240,101	127,429	39,310,095	12,836	5,167,775
October .....	.....	276,292	126,247,679	132,187	80,745,596	135,158	41,783,894	8,947	3,718,189
November .....	.....	211,805	94,932,292	97,734	58,596,676	103,950	32,840,123	10,121	3,995,493
December .....	.....	170,399	80,088,696	74,095	48,846,672	89,969	28,574,295	6,335	2,667,729
Total (year) ..	.....	3,502,029	\$1,622,316,239	1,825,339	\$1,089,903,836	1,521,336	\$468,169,568	155,354	\$64,242,835
1930									
January	\$52,363,467	164,638	\$72,997,775	78,319	\$45,026,703	80,723	\$25,526,546	5,596	\$2,444,526
February	61,163,496	197,608	84,756,722	95,199	52,749,661	95,340	29,095,300	7,069	2,911,761
March	76,573,760	285,418	120,872,894	137,365	76,292,271	141,611	41,474,040	6,442	3,106,583
April	84,228,709	341,842	144,891,375	169,994	93,404,850	162,823	48,460,620	9,025	3,025,905
May	*82,803,381	*344,220	*145,346,014	*168,614	*93,506,638	*167,296	*48,487,788	*8,310	*3,297,588
June	64,915,231	332,852	141,888,578	157,874	89,939,011	166,560	48,688,483	8,418	3,261,084
Total (6 mos.)	\$422,048,044	1,666,578	\$710,753,358	807,165	\$450,919,134	814,353	\$241,732,777	44,860	\$18,047,447

* Revised.

Men of the Industry and What They Are Doing

Cadillac's New Appointee



Earl A. Thompson, whose appointment as assistant chief engineer, to succeed W. R. Strickland, was announced last week in *Automotive Industries*.

R. S. Archer, Aluminum Co. of America, Cleveland; J. R. Adams, the Midvale Co., Nicetown, Philadelphia; V. T. Malcolm, Chapman Valve Mfg. Co., Indian Orchard, Mass.

Sloan, Utility Head, Is Chrysler Director



Matthew Scott Sloan, president of the New York Edison Co., and bank and industrial director, was elected a director of Chrysler Corp. last week.

Gittins Heads Case Board

Ellis J. Gittins, vice-president of the J. I. Case Co., has been elected chairman of the board, a newly created position. Mr. Gittins has been with the company 42 years.

A.S.S.T. Session Organized

Dr. Albert Sauveur, professor of metallurgy and metallography at Harvard University, has been announced as chairman of the meeting of the American Society for Steel Treating in Chicago, Wednesday morning, Sept. 24, during the National Metal Congress. The annual Campbell Memorial Lecture will be given at this time by Dr. M. A. Grossmann, Republic Steel Corp., Massillon, Ohio, who will discuss, "Oxygen in Steel."

Others who have accepted chairmanships are: H. W. Gillett, director, Battelle Memorial Institute, Columbus, Ohio; H. J. French, International Nickel Co., Bayonne, N. J.; Donald G. Clark, director of sales, Firth-Sterling Steel Co., McKeesport, Pa.

J. Fletcher Harper, Allis-Chalmers Mfg. Co., Milwaukee, Wis.; G. B. Waterhouse, Massachusetts Institute of Technology, Cambridge, Mass.; Jerome Strauss, Vanadium Corp. of America, Bridgeville, Pa.

C. H. Herty, Jr., U. S. Bureau of Mines, Pittsburgh; V. O. Homerberg, Massachusetts Institute of Technology, Cambridge, Mass.; E. C. Bain, U. S. Steel Corp., Kearny, N. J.

Vice-chairmen will be: Francis H. Clark, Western Union Telegraph Co., New York City; A. H. d'Arcambal, Pratt & Whitney Co., Hartford, Conn.; E. F. Cone, *The Iron Age*, New York City.

Moon's Vice President

F. W. Ayres, who succeeds J. E. Roberts as vice-president and general manager of Moon Motor Car Co., is an automobile veteran.



Donates to Hospital

Lloyd Raymond Smith, president of the A. O. Smith Corp., Milwaukee, and Mrs. Smith have made the gift of a convalescent home costing \$250,000 and containing 50 beds to the Milwaukee Children's Hospital, a semi-public institution, to which they have been liberal contributors for many years. Mr. Smith's mother and sister will donate complete equipment and furnishings. Ground already has been broken for the new home, situated 10 miles west of Milwaukee in Waukesha County. It represents one of the largest single charitable gifts that have ever been made in Milwaukee.

Hollowell Heads Verville Sales

D. H. Hollowell has been appointed sales manager of the Verville Aircraft Co. For the past two years he has directed the sales of the American Eagle Aircraft Corp., Kansas City, and prior to that was for a long time identified with the automobile industry.

Heads Tillotson Engineers

E. A. Rullison has succeeded C. S. Kegerreis, resigned, as chief engineer of the Tillotson Mfg. Co., Toledo. W. T. Burwell is assistant engineer. Both have been with the carburetor concern for several years.

Otton Leaves Moto Meter

Alfred S. Otton resigned from his position as head of the trade sales division of the Moto Meter Gauge & Equipment Corp., Toledo, Ohio, effective Aug. 15, to join the newly formed Hurley-Towsend Corp., New York, as sales and advertising manager.

Mr. Otton joined the Moto Meter organization eight years ago. He was made head of the division when the original Moto Meter company merged with the National Gauge & Equipment Corp., and with the Nagel Electric Co.

U. S. Rubber Dealer Sales Hit New High

Best Unit Volume in Five Years, Reported

DETROIT, Aug. 20—Unit sales of tires to dealers during July were the highest in five years and were exceeded by only one previous July in the history of the United States Rubber Co., L. M. Simpson, general sales manager of the tire department, announced.

Sales so far into August are holding at a comparatively high level, and present indications are that the last six months of this year will show a comfortable increase in dealer sales over the same period last year, Mr. Simpson declared.

This performance is all the more remarkable in the face of present business conditions.

The only July to show a higher volume in casing sales by the United States Rubber Co. was in 1925, Mr. Simpson explained. In that year, he pointed out, a number of price advances occurred in June and July with the result that many dealers contracted for more than the normal requirements of casings in anticipation of still further advances in the fall.

"The July record was the direct result of new improved design products priced at the lowest levels in the history of the company, and a generally strengthened and aggressive dealer organization," Mr. Simpson declared.

Genoa Might Get Ford Plant

GENOA, Aug. 18—Local financial circles today expressed the belief that the Ford plant in Italy was likely to be moved here soon from Triest.

The Triest works have not been running fully lately.

Moock Joins Chrysler

CHICAGO, Aug. 18—Harry G. Moock has been appointed director of used car activities of all divisions, by the Chrysler Corp., Detroit, according to announcement by J. E. Fields, vice-president in charge of sales. Mr. Moock has had a wide experience here as a dealer, factory sales manager, secretary of local and state dealer trade organizations and two leading automotive trade organizations.

Kreis Joins Studebaker

SOUTH BEND, Aug. 21—Announcement of the appointment of Oscar C. Kreis as a consulting engineer, is made by D. G. Roos, chief engineer of the Studebaker Corp. Mr. Kreis was in the experimental engineering division of the Packard Motor Car Co. for many years, and for the past fourteen years has been research and development engineer for the Continental Motors Corp.

August 23, 1930

Sloan Reports General Motors Retail Passenger Car Sales Off During July

NEW YORK, Aug. 18—During the month of July, General Motors dealers in the United States delivered to consumers 80,147 cars, according to an announcement made today by Alfred P. Sloan, Jr., president. This compares with 97,318 in the month of June and with 147,079 in July, 1929.

Sales by General Motors manufacturing divisions to dealers in the United States amounted to 70,716 cars, as compared with 87,595 in June and as compared further with 157,111 in July, 1929.

Total sales to dealers, including Canadian sales and overseas shipments, amounted to 79,976 cars, or over 3300 cars per day, as compared with 97,440 in June and as compared further with 189,428 in July, 1929.

The following table shows sales to consumers of General Motors cars in continental United States, sales by the manufacturing divisions of General Motors to their dealers in continental United States, and total sales to dealers, including Canadian sales and overseas shipments:

	United States				Total Sales to Dealers, Including Canadian Sales and Overseas Shipments	
	Sales to Consumers	Sales to Dealers	1930	1929	1930	1929
January	74,167	73,989	94,458	95,441	106,509	127,580
February	88,742	110,148	110,904	141,222	126,196	175,148
March	123,781	166,942	118,081	176,510	135,930	220,391
April	142,004	173,201	132,365	176,634	150,661	227,718
May	131,817	169,034	136,169	175,873	147,483	220,277
June	97,318	154,437	87,595	163,704	97,440	200,754
July	80,147	147,079	70,716	157,111	79,976	189,428

These figures include sales of Chevrolet, Pontiac, Olds, Marquette, Oakland, Viking, Buick, LaSalle and Cadillac passenger cars and trucks.

Hurley-Townsend to Make Cooled Plug

NEW YORK, Aug. 18—A spark plug of unusual characteristics will shortly be put on the market by the Hurley-Townsend Corp., recently incorporated.

The new H-T "Copper-Cooled" plug represents a distinct departure and largely circumvents the danger of both preignition and fouling. In it, use is made of the fact that copper conducts heat ten times as fast as steel—the large center electrode is surrounded by a copper tube which conducts the heat away from the nose of the plug, allowing higher compression to be used without unduly shortening the length of the nose.

Laminated mica insulation is used and absolute compression tightness is obtained, as the copper tubing around the center electrode is expanded and

thus forced firmly against the mica during manufacture.

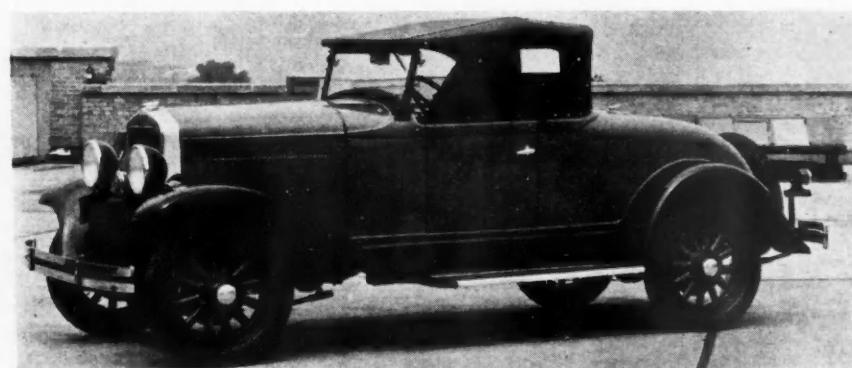
It was designed by Roy T. Hurley, formerly general manager of the B-G Corp. and later of the Moto Meter Co.

Triumph Commercial Car to Have 7 hp. Engine

LONDON, Aug. 18—Organization of the Triumph Commercial Cars, Ltd., has been announced. The company plans to produce a 7 hp. light delivery truck.

Plan A.J.S. Production

LONDON, Aug. 18—The A. J. Stevens interests announced here that the A.J.S. 9 hp. automobile, is ready for production after months of experimental work.



A new two-passenger roadster, listing at \$535 and representing the lowest price ever placed on a Chrysler Motors model, is announced by Plymouth Motor Corp. At the same time a price reduction of \$25 on the standard coupe is also announced. This model now lists at \$565 + + + + + + + + +

Automotive Industries

Durant Inc., Will Build Mathis, Midget French Automobile at Lansing

(Continued from page 271)

the Durant salesroom, 16 West Sixty-first Street, New York, during the week of August 24.

Charter of the American Mathis corporation was issued under the laws of Delaware on August 11. It will have a paid capital of three million dollars. E. E. C. Mathis will be chairman of the board and the personnel of American Mathis, Inc., will be announced directly following a meeting of the company in New York on August 28, Mr. Durant announced.

Mr. Durant is optimistic over the future of the Mathis car. He declares that the day of the smaller automobile is seriously at hand. "Parking difficulties and expense for garage space are considerations in large cities that must be met. A good small car, with power and stamina, will go



Ralph A. Vail

far in meeting that problem," the motor magnate said.

Mr. Durant returned to Lansing Tuesday afternoon after the formal meeting of the new directorate and officers of the reorganized Durant Motors, Inc. He will remain in the city for some time personally supervising preparations for execution of the Mathis contract.

New officials of the company are all well-known men in the industry. Mr. Vail is the only member of the former group of executives to be retained in the new organization.

Manufacture of Durant cars and trucks is being continued by the company as in the past. Production of the new line of French cars will be entirely separate from the Durant products.

Durant dealers, if they can qualify, will be given an opportunity to handle the Mathis, but the control of the distribution is entirely in the hands of the American Mathis company, with headquarters in Lansing.

The huge Lansing plant of Durant Motors has the facilities for mass production and is large enough to house the Mathis car assembly line for at

least the present, it was explained.

Rumors that Durant plans extensive building expansion here, that the company has acquired additional property, and others, have not yet been put to rest. Mr. Durant is expected to make additional announcements within a few days.

Messrs. Alger, Herbermann and Johnston have been associated with Mr. Durant for many years. Mr. Alger was general manager of Durant Motors in 1922-23. Mr. Herbermann, an attorney, has been counsel in legal matters for Mr. Durant for the past 20 years.

Mr. Johnston's association with Mr. Durant dates back about 18 years. For several years he was Durant's assistant at Buick following the formation of Chevrolet by Durant, he was appointed first sales manager of company and later with the inception of Frigidaire, he shaped the sales organization of that company. Since Durant Motors, Inc., was organized he has been assistant to Mr. Durant.



Edward Ver Linden

Shorter Heads Durant's Sales

LANSING, Aug. 20—H. J. Shorter, who has been associated with Durant Motors, Inc., since May, 1923, has been named general sales manager of the newly reorganized Durant Corp., W. C. Durant announced here Wednesday.

Mr. Shorter has been assistant general sales manager of Durant Motors since the former group of executives headed by Frederick J. Haynes took over the company in 1928. He started with Durant as a field man working out of the Lansing office in St. Louis territory.

He then became assistant sales manager of the Lansing plant. In October, 1924, he went to Pittsburgh as district manager and in October was transferred to Elizabeth, N. J., as assistant sales manager, where he served until he was promoted under the Haynes organization.

Mr. Shorter was with C. T. Silvar, large New York distributor, for eight years prior to his association with Durant Motors. He is experienced in every phase of the sales field.

Export Firm Formed

NEW YORK, Aug. 18—Aztec Export Corp. has been formed as a subsidiary to the Asbestos Textile Co. to act as export managers and will also function in this same capacity for other automotive replacement firms. The Aztec line consists of brake linings, clutch facings, etc.

They have already representatives working for them in practically all foreign markets.

Canadian Air-Railway Route to Link Coasts

Government Bureau May be Established

WASHINGTON, Aug. 20—Plans are nearing completion to establish a trunk line air and rail service across Canada, according to a report from Consul George Gregg Fuller of Kingston, Ont., made public by the Department of Commerce.

The project's leader is reported to be James A. Richardson of Kingston and Winnipeg, grain magnate, and director of the Canadian Pacific Railway, and largest shareholder of the Aviation Corp. of Canada, comprising Canadian Airways, Interprovincial Airways and Canadian Transcontinental Airways.

The report states that the prime minister has announced that the Dominion government contemplates the establishment of a new department to be known as the Department of Communication, which will embrace both aviation and radio.

German Used Car Sales Are Strong

BERLIN (special)—While during the first four months of 1930 27,200 new cars were registered in Germany, old cars re-registered totaled 48,971.

In January, 69 per cent of all cars sold in Germany were used cars; in February, 66 per cent; in March, 63 per cent, and in April, 62. It was found that the old car market developed along similar lines as in the United States, where about one and one-half old cars are being sold for every new one.

Young is Appointed Peerless Sales Head

CLEVELAND, Aug. 18—William T. Young, Jr., formerly advertising counsel for the Peerless Motor Car Corp., has been appointed general sales director by J. A. Bohannon, president. He succeeds R. B. Nettleton, who resigned recently to organize an automobile distributorship here with his son. Mr. Young resigned as vice-president of Homer McKee Co., Inc., advertising agency.

Joins Anti-Noise Board

CHICAGO, Aug. 18—Robert T. Hendrickson of the Hendrickson Motor Truck Co., Chicago, manufacturers of medium and heavy-duty trucks and one of the oldest members of the Chicago Automobile Trade Association, has been appointed a member of the motor truck committee of the proposed Chicago Anti-Noise Commission by Health Director Arnold H. Regel.

Issues 310 Certificates of Airworthiness for Aircraft Export to Canada Since 1927

WASHINGTON, Aug. 16—The Aero-nautics Branch of the Department of Commerce has issued 310 certificates of airworthiness for export of aircraft to Canada from Jan. 1, 1927, to Aug. 8, 1930, according to a tabulation made public by Gilbert G. Budwig, director of air regulation of the Aero-nautics Branch.

The number of certificates of airworthiness for export to Canada issued from the first of this year to Aug. 8 was 64. The greatest number issued was during the year 1929 when the total reached 135.

A record of export airworthiness certificates issued by the Department of Commerce, follows:

Type and Model	Aircraft Exported				
	1927	1928	1929	1930 to Date	Total
Aeromarine Klemm			1	..	1
L-25-A		1	..	1	1
AKL-26		1	..	1	1
American Eagle	2	2	..	4	4
A-1-29		5	..	5	5
Aristocrat 102A			1	1	1
Arrow Sport		1	..	1	1
Bellanca CH-300		7	3	10	10
Pacemaker			2	2	2
Pacemaker CH-300			5	5	5
Boeing B1D	1	..	1	..	1
BIE	2	2	..	4	4
40-B4		3	..	3	3
Buhl CA6		2	..	2	2
CA-3C	1	..	1	..	1
Airsedan	1	..	1	..	1
Cessna AW		1	..	1	1
Challenger C2		1	..	1	1
C4C		1	..	1	1
Curtiss Robin		8	..	8	8
C-1		6	3	9	9
Fledgling		3	..	3	3
Driggs Dart-2	1	..	1	..	1
Long Wing Eaglerock	1	1	..	2	2
Comb. Eaglerock	1	1	1	..	3
Eaglerock A-1	1	..	1	..	1
A-2		2	1	3	3
A-3		1	..	1	1
Fairchild FC2	9	17	1	27	27
FC2W	2	6	..	8	8
FC2W2		8	4	1	13
71		19	16	35	35
C6B			1	1	1
KR-21		2	..	2	2
KR-34C			1	1	1
Fleet Model 2		1	4	5	5
Fleetster Model 20,			1	1	1
Type 2			1	1	1
Fokker Universal	7	1	..	8	8
Super Universal	9	2	..	11	11
F-XIV		6	..	6	6
Ford 4-AT		1	..	1	1
6-AT-S		2	..	2	2
Great Lakes 2-T-1.		1	..	1	1
Golden Eagle Chief		1	..	1	1
Total			22	89	135
				64	310

Des Moines Ford Starts Production

DES MOINES, IOWA, Aug. 18—Assembly plant of the Ford Motor Co. here resumed operations this week after a brief shutdown. New production schedules call for 125 cars daily, 12 less than were being turned out at the time of the suspension.

The plant force of 750 returned to work and H. N. Bradford, manager, predicted that schedules will be increased soon. Mr. Bradford, during the shutdown, made a tour of Iowa dealers, reporting that stocks at the plant are depleted and dealers' stock low, although unanimous opinion is that the entire automobile industry will witness a revival in the fall.

Illinois Registration is 1,372,717

SPRINGFIELD, ILL., Aug. 16—Registration of automobiles and trucks in Illinois on Aug. 1 reached 1,372,717 with 195,172 trucks registered, while license fees had exceeded \$18,000,000,

all of which goes into the state road building fund. July passenger car registration was 54,841 with over 8000 trucks licensed that month.

Aircraft Industry Production Near \$62,000,000 in 1929

WASHINGTON, Aug. 18—The Bureau of the Census announces the total value of products made in 1929 by establishments in the United States engaged primarily in the manufacture of aircraft and parts amounted to \$61,973,079, an increase of 192.9 per cent as compared with \$21,161,853 reported for 1927, the last preceding census.

The total for 1929 is made up as follows: Airplanes, 5130, valued at \$38,724,987; seaplanes and amphibians, 175, valued at \$5,949,671; parachutes, 6188, valued at \$1,437,602; propellers, 14,184, valued at \$2,040,299; other complete aircraft, \$639,990; airplane parts, and engines made for sale as such, \$8,187,285; repair and experimental work, \$3,387,269; other products, \$1,605,976.

Automotive Steel Requirements Up

Strip Mills Report Gains In Orders, Increase Schedules

NEW YORK, Aug. 20—Strip steel mills, whose operating rate for a time had declined to the lowest level of any of the industry's divisions, booked sufficient business in the last 10 days from automotive consumers to enable them to run at about the same rate as most of the sheet mills.

A slight dip in Mahoning Valley rolling mill activities this week resulted from one of the largest independents making the first cut in its operating rate since July 1. The other independents are maintaining previous working schedules.

Parts makers, as well as motor car manufacturers, are ordering steel shipments in strict accordance with their own operating schedules and turn a deaf ear to all offers of inducements, acceptance of which would entail stocking of steel products at this time.

For a number of years July has shown losses in the unfilled tonnage of the corporation, so that last month's gain comes as a pleasant surprise. One can go back to the days before hand-to-mouth buying became dominant, and find instances of gains in July, but certain it is that, as a rule, unfilled tonnage has shrunk in that month. All in all, market sentiment continues to improve, although this is so far not reflected in a firmer tone. Shading of prices on anywhere near attractive business continues with base prices unchanged.

Pig Iron—Current production is at the rate of about 1500 tons per day less than last month, so that although there has been no appreciable broadening in foundries' demand the market rules somewhat more firm. Most of the buying consists of single carload lots.

Aluminum—The market is dull with prices for virgin metal unchanged. Secondary No. 12 alloy has been offered to foundries at as low as 15c.

Copper—Consumers appear to have fairly well covered their requirements over the next two months. The market's statistical position is thought to have undergone improvement, but consuming interest for the time being is in abeyance.

Arthur S. Holmes Dies

Arthur S. Holmes, president of the Holmes Engineering Co., Oshkosh, Wis., and noted inventor and designer of semi-automatic, high-production machinery widely used in the automotive industries, died Aug. 10 following a short illness with pneumonia and heart trouble. He was 55 years of age and a native of Oshkosh. After traveling for the Challoner Co., Oshkosh, and Reed & Dueker, Memphis, Tenn., machinery manufacturers, Mr. Holmes became vice-president and sales manager of the Green Bay (Wis.) Drop Forge Co. in 1914. He resigned Jan. 1, 1929, to carry on his inventive work, establishing the Holmes Engineering Co. Mr. Holmes enjoyed an unusually extensive acquaintance among automotive production executives.

New York Contemplates Impounding Old Cars

Commissioner Thinks Bureau Will Sponsor Bill Soon

ROCHESTER, Aug. 18—The New York State Bureau of Motor Vehicles is studying a plan to establish state pounds for obsolete automobiles, Charles A. Hartnett, commissioner of the bureau, revealed here last week. He was in this city to address the convention of the New York State County Clerks' Association.

Mr. Hartnett said the idea appeared feasible to him and probably the bureau would sponsor a bill in the State Legislature embracing the plan after a thorough study had been made. The plan calls for huge incinerators in which obsolete cars would be disposed of.

The commissioner denied rumors that the bureau would take steps to eliminate the driving of old cars on the highways. He said present state laws provide adequately for public safety.

In his address to the county clerks, he said there was a distressing lack of cooperation between states with regard to automobile legislation and urged a new policy which would make for more uniform motor laws.

Indianapolis Plants Beginning Operations

INDIANAPOLIS, Aug. 18—Approximately 880 men have returned to employment at the Ford Motor Co. Indianapolis branch factory. This represents about 73 per cent of the force employed before the shutdown more than three weeks ago. George J. Steinmetz, manager of the branch, said that production estimates were being compiled now in the Detroit offices and it is expected that most of the normal force will return shortly after Sept. 1.

The Marmon Motor Car Co. is working approximately four days a week with about 82 per cent of the usual number being employed for that number of days with a few working on a shorter schedule. According to officials at the plant, orders received within the week will cause an increase in production schedules which should increase the working hours of the men, but they did not foresee any increase in the number of men in the immediate future.

The Stutz Motor Car Co. of America has been operating on orders for some months with the working force varying from time to time, according to E. S. Gorrell, president.

Tire Employment Down

COLUMBUS, Aug. 20—The Bureau of Business Research of Ohio State University in a bulletin showing employ-

ment in tire and tube plants showed July employment was 4 per cent less than in June this year and 26 per cent less than in July, 1929. On the average, July employment has been showing an increase over June employment of approximately 1 per cent.

Average employment during the first seven months of the present year was 21 per cent less than in the corresponding period in 1929. Of the 15 concerns reporting, 12 shared in the decrease in July employment over that of June, two reported increases and one showed no appreciable change.

Thermoid Reports \$283,294 Net Profits for Half Year

NEW YORK, Aug. 18—Thermoid Rubber Co. and wholly owned subsidiaries report net profit for the six months ended June 30 of \$283,294. This is equivalent after preferred dividends to 77 cents a share on common stock and compares with earnings of \$464,850, or \$1.38 a share, on a comparable basis for the corresponding period of last year.

Federal Screw Reports Earnings

DETROIT, Aug. 20—Federal Screw Works has reported net earnings after depreciation available for interest on convertible 6½ per cent ten-year gold notes, amounting to \$393,840, over six and one-half times the interest requirements for the period. After providing for interest and Federal income tax, the net earnings of \$290,342 were equivalent to \$1.83 per share on 159,000 shares of capital stock.

Regular quarterly dividend of 75 cents per share has been declared payable Oct. 1 to stockholders of record at the close of business Sept. 15.

Waco-Kinner Approved

GLENDALE, CALIF., Aug. 19—The Department of Commerce has granted Approved Type Certificate No. 345 on the Waco three-place Model F biplane, powered with the Kinner B-5 125-hp. motor. This ship has also been approved with the 100-hp. Kinner motor.

Gen. Menoher Dies

WASHINGTON, Aug. 18—Major General Charles T. Menoher, retired, one-time battle commander of the Rainbow Division in France, and a former chief of the Army Air Corps, died late Monday in St. Elizabeth's Hospital after an attack of pneumonia.

Earned \$1.25 a Share

NEW YORK, Aug. 12—Sparks-Withington Co. reports net profit for the year ended June 30 of \$1,738,617, or \$1.25 a share, on common stock after preferred dividends.

Dayton and Pheasant Companies in Merger

Goodman-Crouch Heads Consolidated Concerns

CHICAGO, Aug. 16—Dayton Airplane Engine Co. and the Pheasant Aircraft Corp. of Fond du Lac, Wis., have merged, according to announcement by George Funkhouser, president of the Dayton firm.

It is planned to absorb several smaller airplane companies, he said.

The plants of the merged firms will be moved to Pawtucket, R. I., where they will be consolidated.

Capt. R. J. Goodman-Crouch will be president of the new concern with Mr. Funkhouser, chairman of the executive board.

Report Plans for Steyr Production

WASHINGTON, Aug. 20—Advices received from Europe lend additional weight to reports that a new small car is to be introduced by the Steyr Automobile Works of Steyr, Austria, according to the Automotive Division, Department of Commerce.

Mengel Reports Earnings

LOUISVILLE, Aug. 20—The Mengel Co., Louisville, of which the Mengel Box Co., and Mengel Body Co., are subsidiaries, has issued a report showing second quarter net sales of \$2,460,244 and for the half year net sales of \$5,526,534, with net profit of \$67,388, after all charges and estimated Federal tax for the quarter; and \$210,311 for the half year. Unfilled orders on July 21, this year, were given at \$1,514,000, as against \$2,507,000 on the same date of 1929.

Illinois Club Plans Home

CHICAGO, Aug. 18—Detailed plans are completed and construction is expected to begin Jan. 1, 1931, on the new home of the Motorists' Association of Illinois. The 10-story structure, with a 19-story tower, is to cost \$1,500,000, and will occupy the southwest corner of Michigan Avenue and Twenty-fourth Street, for years the site of the Standard Club.

Healey Represents Lea Fabrics

DETROIT, Aug. 18—Lea Fabrics, Inc., of Newark, N. J., manufacturers of a carpet used in automobiles, has announced the appointment of A. J. Healey as sales manager, with headquarters in the Fisher Building, Detroit.

Chicago Ford Will Step Up Production

5000 Units Scheduled for August by Factory

CHICAGO, Aug. 16—The August production schedule in the Chicago plant of the Ford Motor Co. calls for 5000 cars and the employment of 2200 men, five days a week and eight hours a day, but the September output calling for 5500 cars requires the stepping up of production. The production for September is a normal figure for that month and will involve the addition of about 100 men on the payrolls.

There were 5500 Ford cars sold in Illinois during July, state registration figures show. Officials assert no retarding influence has been felt as a result of the drought.

Kentucky Retail Outlook Gloomy

LOUISVILLE, Aug. 20—Automobiles distributed in the rural or agricultural sections of Kentucky this fall will not total more than 25 per cent normal, if that well, in the opinion of a number of the local distributors. A dull market was caused by a five months' drought, which burned up the crops to a point where the farmers will have difficulty in paying their taxes and feeding livestock, and other produce will not pay off their obligations in planting their crops.

A dozen distributors in Louisville all had a gloomy picture to paint.

Chrysler Earnings 77 Cents

NEW YORK, Aug. 18—Chrysler six months' earnings for six months ending June 30, \$3,408,856, equivalent to 77 cents a share on outstanding common stock, as compared with \$18,099,239 or 4.06 cents a share for the corresponding period of last year. Earnings for the second quarter were \$3,228,139 or 73 cents as compared with \$9,257,066 or \$2.07 for the corresponding quarter last year.

Goodyear Declares Dividend

NEW YORK, Aug. 18—Goodyear Tire & Rubber Co. reports net profit for the six months ended June 30 of \$5,592,309 after all charges. This compares with \$12,633,865 for the first half of 1929. Regular quarterly dividend was declared, \$1.25 on common and \$1.75 on preferred.

Pines Winterfront Dividend 25c

NEW YORK, Aug. 18—Pines Winterfront Co. has declared regular quarterly dividend of 25 cents and an extra two per cent stock dividend, both payable Sept. 1 to stockholders of record Aug. 15.

August 23, 1930

Government to Install 150 Double-End 36-in. Lens Beacons on Southern Airway

WASHINGTON, Aug. 18—A contract calling for 150 36-in. airway revolving beacon lights at a price of \$94,050 has been conditionally let by the Airways Division of the Aeronautics Branch, Department of Commerce, F. C. Hingsburg, chief engineer of the Airways Division, announced.

The lights are to be used on the southern transcontinental airway from San Diego, Calif., to Fort Worth, Tex., which is now being surveyed, he stated.

The new type beacon is of the double ended lens type, using a standard 1000 watt filament lamp showing a light in two directions. The 24-in. type now in use is of the drum reflector type, flashing light in only one direction. On the southern transcontinental airway the double-ended feature of the 36-in. beacon will make it possible to eliminate the colored course lights which now accompany the present type by using a colored lens on one end of the light.

All beacons which mark landing fields will show alternate flashes of white and green and intermediate beacons not marking fields will flash red and white alternately. The beacons will be spaced 15 miles apart and intermediate fields 30 miles apart.

The design of the new type beacon is based on the exceptionally efficient re-

sults experienced with the 18-in. course lights employed on optical lenses with doublet. The beacon is double-ended using but one standard 1000 watt airways lamp with lamp exchanger.

The doublets are 18 in. in diameter, and the optical lenses are 36 in. in diameter and in five pieces. The center bull's-eye of the lens is 20 in. in diameter.

The optical lenses are mounted in spider frames placed in the ends of a cylindrical drum three inches in length. The beams of light are elevated by lowering the lamp, this principle having been proved practical and efficient in the present course lights and acetylene range light units.

The simplicity of design and workmanship is the outstanding feature of this unit. Zenith panels are provided in the side doors of the drums to provide upward refraction of light for close range indication.

Each of these new 36-in. units is mounted on a standard base of the type used with the 24-in. revolving beacon. The vertical shaft is mounted in ball bearings with a gear wheel and clutch mounted on the shaft. The beacon is driven by a fractional horse-powered motor with a case-hardened steel-polished worm engaging the gear wheel.

four showed no appreciable change.

Average employment in the industries during the first seven months of the present year was 35 per cent less than during the corresponding period in 1929.

Crude Rubber Strong

NEW YORK, Aug. 20—Despite sub-normal conditions in general business, consumption of crude rubber for the first seven months of 1930 was the highest on record with the exception of 1929. The figure 249,775 long tons although 19.6 per cent below 1929 was 0.3 per cent above the same period in 1928; 7.9 per cent above 1927; 16.4 per cent above 1926; 6.6 per cent over 1925; 37.0 per cent over 1924, and 22.3 per cent over 1923.

Imports of crude rubber of all classes into the United States during the month of July totaled 34,084 long tons according to estimates of the Rubber Manufacturers Association.

Inland Completes Bar Mill

CHICAGO, Aug. 18—The Inland Steel Co.'s new merchant bar mill, which has been under construction for more than a year at the Indiana Harbor Works, is completed.

Automotive Industries

British Car Sales Off 6 Per Cent Registrations for 5 Months Show

LONDON (Special)—The latest monthly returns of new car registrations issued by the Ministry of Transport apply to May last, and for the third month in succession show a reduction as compared with last year, viz., 17,645 as against 19,950. Only during February has an increase been shown this year; taking the first five months together there is a reduction of 5270 units or approximately 6 per cent.

One notable feature of this year's registration returns of passenger cars is the great increase in the 15 hp. class; thus in January it showed an increase of 125 per cent as compared with January, 1929; in March the increase was 116 per cent, while in May it had risen to 168 per cent. This feature is doubtless partly accounted for by the sales of the Morris Six introduced at Olympia last October and partly by increased sales of the Ford with the small bore engine that gives it a 15 hp. rating in England instead of 24 hp., as in the case of the American dimensioned version.

Twelve months ago the 15 hp. class was sixth in order of popularity as evidenced by the number of new cars registered; now it is third. The 8 hp. class (Austin Seven, Morris Minor, etc.,) still maintains first place and the 12 hp. (principally the Morris Cowley) is still second. But as the following table shows the 12 hp. is losing ground

rapidly, while the 15 hp. is advancing quicker still.

Percentage of All Cars Registered
(Seven Most Popular Sizes)

Rating	H.P.						
	8 Per Cent	10 Per Cent	12 Per Cent	13 Per Cent	14 Per Cent	15 Per Cent	16 Per Cent
May, 1929..	23	5	16	6	7	5	10
May, 1930..	22	6	11	6	1	15	10

The table confirms reports received from dealers in nearly all parts of England to the effect that the trend of demand on the part of the vast majority of buyers is toward either "baby" cars or something bigger than the one-time most favored 12 hp. type. As seen, the "babies" still account for over 20 per cent of the total sales in Great Britain.

Both truck and bus registration figures applying to new vehicles were down in May as compared with May last year, though in both cases the total for the first five months is higher than in 1929. The actual January to May figures are:

Trucks 1929	21,434
Trucks 1930	22,669
Buses 1929	4,621
Buses 1930	5,005

Truck sales were increasing until the end of March and bus sales until the end of April. The figures given do not include production for export.

in automobile body production, is incorporating its business under the same name, with a capital consisting of 500 shares of common stock without par value. Additions to plant and equipment are under way. E. A. Anheuser is president and general manager.

Brillion Installs Furnace

MILWAUKEE, Aug. 18—The Brillion Iron Works, Brillion, Wis., has contracted with the Pittsburgh Electric Furnace Corp. for a complete installation of "Lectromelt" equipment with a capacity of 1½ tons per hour and using 1000 kw., served by central station power line. The Brillion concern has been expanding its business in manufacturing gray iron castings such as automobile engine blocks, important machine parts, etc., and it is particularly to handle this class of business that the electric furnace installation is being made.

Louisville Ford Plant Opens Up

LOUISVILLE, Aug. 20—The Ford assembly plant in Louisville resumed production on Aug. 11, but while reports have been put out indicating 65 per cent of normal capacity, it is reliably reported that only 120 to 150 cars are being run off the line daily.

With Louisville sales off 33.3 for the year and more than 40 per cent off in July, along with the severe slump in sales over the rural section as a result of drought, outlook is not promising, as rural Kentucky is generally not expected to be within more than 25 per cent of normal requirements in automobiles this fall.

Outboard Omits Dividend

CHICAGO, Aug. 16—Directors of Outboard Motors Corp. have omitted the regular quarterly dividend of 45 cents on Class A stock, due now.

Triple A Reincorporates

MILWAUKEE, Aug. 18—The Triple A File Co., established two years ago to manufacture a special type file used

Milwaukee S.A.E. Frolics

MILWAUKEE, Aug. 20—The Milwaukee Section, S.A.E., held its annual golf frolic at the Tuckaway Country Club today.

Stanavo Gasoline to Be Used in Chicago

Standard Oil Plans to Introduce Fuel at Races

CHICAGO, Aug. 20—During the National Air Races here, Stanavo, a newly developed aircraft gasoline, will be used, it was announced by the Stanavo Specification Board, Inc., made up of the Standard Oil Co. of California, the Standard Oil Co. (Indiana) and the Standard Oil Co. of New Jersey. The fuel is being made available at airports throughout the country.

It is claimed for the new aviation fuel that its distillation properties assure ease of starting, uniform distribution and low consumption; that it is entirely free from any tendency to vapor-lock, and that it is non-detonating in any present-day commercial aircraft engine.

In addition to four grades of Stanavo aviation engine oil previously announced, the board is now making available a fifth grade, the No. 60, which is intended for use only at very low temperatures, such as are encountered in northern Canada in winter.

See Drastic Tariff Changes in Canada

OTTAWA, ONT., Aug. 20—Automobile manufacturers are expecting drastic changes in the tariff at the forthcoming session of the House of Commons next month. Premier-elect R. B. Bennett plans to call the House together for a special session early in September to deal with unemployment and to provide more work through additional protection to the various Canadian industries.

The Tariff Board of the previous government, which had made a survey of the automobile industry and had not reached a decision regarding the tariff, has been abolished by the Conservative government and it is believed that the duties applicable to automobiles as contained in the last budget will be changed.

Checker Cab Profits \$500,000

NEW YORK, Aug. 18—Checker Cab Mfg. Corp. reports net profit for the six months ended June 30 of \$500,074 after all charges. This is equivalent to \$1.33 a share on common stock and compares with earnings of \$2,720,667, or \$7.25 a share, for the first half of 1929. Regular monthly dividend of 35 cents was declared, payable Sept. 2 to stockholders of record Aug. 23.

Motor Wheel Holds Sales Meet

DETROIT, Aug. 18—Leading dealers and salesmen of the heater division of Motor Wheel Corp., Lansing, from 20 states of the Union, attended a two-day sales conference at the Hotel Olds last week.

Oklahoma is Restrained From Taxing Aero Fuel

Federal Bench Holds Gasoline Levy Illegal

GUTHRIE, OKLA., Aug. 20—Upholding the contention of aviation interests in Oklahoma that the state law under which the state auditor has collected tax on gasoline used by air lines in interstate business is unconstitutional, a United States court of three judges handed down an opinion here enjoining the state from collecting further tax on gasoline used for such purposes.

The suit was brought by the United Airways Co. and other air lines operating in the state, which attacked the unconstitutionality of the laws as conflicting with the Federal interstate commerce laws.

The opinion was concurred in by Judges John H. Cottrell, of the United State Circuit Court of Appeals, Ed. S. Vaught and Robert L. Williams, Federal district judges.

A. S. J. Shaw, state auditor, named defendant, has announced that he will withhold decision on the action of his office in collection of the tax until he has received a copy of the opinion.

Fewer Cars Will be Shown at Olympia

LONDON (Special)—The preliminary list of exhibitors at the Olympia passenger car show which opens on Oct. 16 indicates a probability that a smaller number of makes will be represented this year than last. An analysis of the lists applying to the two years gives the following tabulated comparisons:

Section	1930	1929
Cars	75	86
Bodywork	54	61
Tires	15	16
Accessories and Components	302	333
Service and Garage Equipment	61	
Motor Boats	39	
	546	496

Exhibits of service and garage equipment will be located this year in a separate hall of the latest addition to the Olympia block of buildings; previously they have been intermingled with the accessories and components section. Motor boats are a new feature of the show this year.

The latest extensions of Olympia have been completed and will be brought into full use for the show. There are now four principal halls, and to enable them to be readily identified, new nomenclature is being applied to them as follows:

Grand Hall, hitherto designated Main Hall.
Grand Hall Annex, hitherto designated Annex.

August 23, 1930

++ CALENDAR ++ OF COMING EVENTS

SHOWS

Lwow, Poland, Sample Fair...September
London, England, Olympia Show...October
Berlin, International Automobile...Nov. 6-16
National Roadbuilders' Show and Convention, St. LouisJan. 10-16

CONVENTIONS

Society of Automotive Engineers, Aero-nautical, ChicagoAug. 26-28
National Air Races, Chicago,Aug. 23-Sept. 1
Fifth International Air Congress, Auspices Royal Aero Club, The Hague, HollandSept. 1-6
American Chemical Society Fall Meeting, CincinnatiSept. 8-12
Eastern States Exposition, Springfield, Mass.Sept. 14-20
A. S. M. E. Machine Shop Practice Meeting, ChicagoSept. 22-24
A. S. M. E. Iron and Steel Division Meeting, ChicagoSept. 22-26
American Welding Society Meeting, ChicagoSept. 22-26
Society for Steel Treating Meeting, ChicagoSept. 22-26
American Gear Manufacturers Association, Semi-Annual Meeting, Hotel Clifton, Niagara Falls, Ont., CanadaSept. 29-Oct. 1
National Safety Council, Annual Safety Congress, Pittsburgh...Sept. 29-Oct. 4
A. S. M. E. Petroleum Division Meeting, Tulsa, Okla.Oct. 6-8
Sixth International Road Congress, Washington, D. C.Oct. 6-11
Exhibition—American Roadbuilders Association, Washington, D. C., Oct. 6-11
Society of Automotive Engineers, Production, Book-Cadillac Hotel, DetroitOct. 7-8
A. S. M. E. General Meeting, French Lick SpringsOct. 13-15
Society of Industrial Engineers, Washington, D. C.Oct. 15-17
Society of Automotive Engineers, Transportation, Pittsburgh...Oct. 22-24
Motor and Equipment Association, Convention, ClevelandNov. 10-14
N.S.P.A. Convention, Cleveland, Ohio, Nov. 17-21
First International Aerial Safety Congress, Paris, FranceDec. 10-23
Society for Steel Treating (National Western Metal and Machinery Exposition), San Francisco..Feb. 16-20

SALONS

Chicago, Drake HotelNov. 8-15
New York, Commodore Hotel,Nov. 30-Dec. 6
Paris, FranceOct. 2-12
Prague, CzechoslovakiaOctober
Paris, France, Salon (Commercial Vehicles)Nov. 13-23
Brussels, Belgium, SalonDec. 6-17

RACES

Italy (Grand Prix)Sept. 7
France (Grand Prix)Sept. 21

National Hall, hitherto designated New Hall.

Empire Hall, the latest addition.

What is now to be termed the National Hall, and has hitherto been known as the New Hall, is the addition that was completed approximately seven years ago.

Among the cars represented last year but missing from the list applying to this year's show are the following American makes: Graham-Paige, Duesenberg, Moon, Hupmobile and Reo. It is possible, however, that one or more of these may be included in the final list of exhibitors.

U. S. Highway Program Reaches 122 Billion

Drought Relief by Employment Started by President Hoover

WASHINGTON, Aug. 21—Acting quickly to assist in carrying out the farm drought relief plans determined upon at the White House last week between President Hoover and state governors, Secretary of Agriculture Hyde on Saturday announced the allotment of \$121,875,000 as the Federal government's share of the highway construction fund.

Ordinarily the total would become available the fiscal year beginning July 1, 1931, but in order to meet the emergency arising from unemployment, due partially to the drought, the total is made available at once, the individual states being required to match the Federal government's contribution dollar for dollar.

Of the total amount provided by the United States Treasury, approximately \$40,000,000 went to the 13 states which are suffering the most from the drought and where conditions are described as being extremely serious.

Some states have already begun arrangements for immediate highway construction on the strength of the Federal funds becoming available.

Peerless Shows Quarter Profit of \$63,330 Net

CLEVELAND, Aug. 20—The Peerless Motor Car Corp. has shown a net profit for the past three consecutive quarters of the fiscal year, J. A. Bohannon, president, reports. Net profit for the quarter ended June 30 was \$63,329.89.

For the nine months ended June 30, 1930, operations have resulted in a net profit of \$208,829.30, after provision for depreciation and all other charges, notwithstanding the existing sub-normal marketing conditions felt by the entire industry.

Swedish Bus Announced

TROLLHATTEN, SWEDEN, Aug. 18—The Nydqvist & Holm Co. has commenced to build automobile omnibuses, using motors bought from abroad, according to United States Consul H. C. von Struve, Goteburg. The first product of this class is of the largest size that can traffic the Swedish roads and highways in general. The wheel base is 18 ft., the length over all is 28 ft., and the maximum width, 6.7 ft. The engine consists of a Maybach motor of 105 effective horsepower.

Spring Concern Formed

CHICAGO, Aug. 18—Acme Spring & Wire Co. has been incorporated under Illinois law to deal in automotive mechanical springs and wire specialties.

Automotive Industries